

CORNELL UNIVERSITY OFFICIAL PUBLICATION

Volume XXIII

Number 14

Announcement of the Forty-first

Summer Session

1932

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ANNOUNCEMENT OF THE SUMMER SESSION

This pamphlet is designed to give prospective students complete information about the Summer Session of Cornell University. On the last page there is a list of other publications which describe the courses of study offered during the regular academic year by the several colleges and schools of the University.

SUMMER SESSION OF THE LAW SCHOOL

See page 49 for information about the summer courses in Law to be given at Cornell University in 1932.

THE SUMMER SCHOOL OF BIOLOGY

See page 60 for information about the summer courses in Biology to be given at Cornell University in 1932.

THE NEW YORK STATE SUMMER SESSION AT CORNELL UNIVERSITY

See page 66 for information about the summer courses in Agriculture and in Home Economics to be given at Cornell University in 1932.

OFFICE AT GOLDWIN SMITH 252

The office of the Summer Session is in Room 252, Goldwin Smith Hall. This office will be open as a bureau of information on registration day from 9 A. M. till 1 P. M. and from 2 till 5 P. M., and thereafter throughout the session, daily except Saturday from 9 till 12:30 and from 2 till 4.

Members of the staff of instruction may be consulted at their offices on Monday, July 11.

THE SESSION MUST BEGIN PROMPTLY

In order to get the full number of exercises announced for the session, it is necessary that all work begin promptly on Tuesday morning, July 12. Students are urged to reach Ithaca in time to be present at the first exercise of each class. They should, if possible, register on Monday, July 11; if not, then on Tuesday, July 12, in an hour not occupied by class work.

AUTOMOBILE PERMITS

Any student wishing to operate an automobile during the Summer Session must at the time of registration secure an official permit. For issuing permits an officer of the University will be present in the registration room. The fee is one dollar.

THE CALENDAR

THE FIRST TEN DAYS

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|-----------------------------------|--|
| July 11, Monday, 8 A. M.-5 P. M. | Registration, <i>Room A, Goldwin Smith Hall.</i> |
| July 12, Tuesday | Instruction begins at the time and place announced for each course. Registration is continued in <i>Goldwin Smith A.</i> |
| July 12, Tuesday evening | Organ Recital, <i>Sage Chapel.</i> |
| July 14, Thursday evening | Piano Recital. |
| July 15, Friday, until 4 P. M.... | Last day for payment of fees at the Treasurer's office, <i>Morrill Hall.</i> |
| July 17, Sunday, 11 A. M..... | Public Worship and Sermon in <i>Sage Chapel.</i> |
| July 17, Sunday evening | Organ Recital, <i>Bailey Hall.</i> |
| July 18, Monday evening..... | Lecture Course. |

THE REGULAR WEEKLY SCHEDULE

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|--------------------|---|
| Sunday, 11 A. M. | Public Worship and Sermon, <i>Sage Chapel.</i> (Beginning July 17.) |
| Sunday evening, | Organ Recital, <i>Bailey Hall.</i> (Beginning July 17.) |
| Monday evening, | Lecture Course. (Beginning July 18.) |
| Tuesday evening, | Organ Recital, <i>Sage Chapel.</i> (Beginning July 12.) |
| Wednesday evening, | Departmental Lectures and Conferences. (Beginning July 13.) |
| Thursday evening, | Lecture-Recital. (Beginning July 14.) |
| Friday evening, | Plays by Summer Theater Company. (Beginning July 15.) |
| Saturday evening, | Plays by Summer Theater Company. (Beginning July 16.) |

THE LAST DAY

| | |
|-------------------------|----------------------|
| August 19, Friday | Summer Session ends. |
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THE WEEKLY CALENDAR

The WEEKLY CALENDAR of the University carries announcements of all public exercises held in connection with the Summer Session. It is posted on the bulletin boards.

CORNELL UNIVERSITY

THE SUMMER SESSION OF 1932

OFFICERS

The President of the University

LIVINGSTON FARRAND, A.B., M.D., L.H.D., LL.D.

The Provost of the University

ALBERT RUSSELL MANN, B.S., A.M., D.Sc., D.Agr.

ADMINISTRATIVE BOARD

Executive Committee

RIVERDA HARDING JORDAN, Ph.D., *Chairman*

BENTON SULLIVAN MONROE, Ph.D., *Secretary*

FLOYD KARKER RICHTMYER, Ph.D., *Dean of the Graduate School*

DEXTER SIMPSON KIMBALL, M.E., *Dean of the College of Engineering*

ROBERT MORRIS OGDEN, Ph.D., *Dean of the College of Arts and Sciences*

ROLLAND MACLAREN STEWART, Ph.D., *Director, New York State Summer Session*

The Registrar

EUGENE FRANCIS BRADFORD, Ph.D.

The Dean of Women

R. LOUISE FITCH, A.M.

STAFF OF INSTRUCTION

(The names of the instructors in the New York State Summer Session at Cornell University are printed on pages 69-71; those of the instructors in the Summer Session of Law, on page 49; those of the instructors in the Summer School of Biology, on page 60; those of instructors in the Graduate School of Education on page 50.)

| | |
|---|--------------------|
| ALBERT LEROY ANDREWS, Ph.D. | German |
| (Professor of German) | |
| FREDERICK S. ANDREWS, A.B. | Music |
| (Former Head, Department of Music, Rollins College, Fla.) | |
| LAWRENCE RUSSELL ANDRUS, A.M. | French |
| (Instructor in Romance Languages) | |
| ALFRED WILLIAM AVENS, M.S. | Chemistry |
| (Instructor in Chemistry) | |
| ELIZABETH BAKER, A.B. | Geology |
| (Instructor in Geology) | |
| MAURICE OLIVE BAKER, A.B. | Chemistry |
| (Assistant in Qualitative Analysis) | |
| DANE LEWIS BALDWIN, M.A. | English |
| (Instructor in English) | |
| DOROTHY HAMMOND BATEMAN | Physical Education |
| (Instructor in Physical Education) | |
| MADISON BENTLEY, Ph.D. | Psychology |
| (Sage Professor of Psychology) | |
| SAMUEL LATIMER BOOTHROYD, B.S. | Astronomy |
| (Professor of Astronomy and Geodesy) | |
| JULIAN PLEASANT BRETZ, Ph.D. | History |
| (Professor of American History) | |

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|--|------------------------|
| THOMAS ROLAND BRIGGS, Ph.D. | Chemistry |
| (Professor of Physical Chemistry and Electro-Chemistry) | |
| WILLIAM H. BRISTOW, M.A. | Education |
| (Deputy Superintendent, Pennsylvania State Department of Public Instruction) | |
| ARTHUR WESLEY BROWNE, Ph.D. | Chemistry |
| (Professor of Inorganic and Analytical Chemistry) | |
| LEROY P. BURNHAM. | Architecture |
| (Professor of Architecture) | |
| EARLE NELSON BURROWS, M.C.E. | Structural Engineering |
| (Assistant Professor of Structural Engineering) | |
| EDWIN C. BYAM, A.M. | French |
| (Assistant Professor of French, University of Delaware) | |
| WALTER BUCKINGHAM CARVER, Ph.D. | Mathematics |
| (Professor of Mathematics) | |
| CHARLES AUGUSTE CHOQUETTE, A.M. | French |
| (Instructor in French) | |
| JACOB ROLLAND COLLINS, Ph.D. | Physics |
| (Assistant Professor of Physics) | |
| LOUIS COWLES CONANT, M.A. | Geology |
| (Instructor in Geology) | |
| WILLIAM JAMES CONGDON, B.Chem. | Chemistry |
| (Assistant in Physical Chemistry) | |
| CLYDE FIRMAN CRAIG, Ph.D. | Mathematics |
| (Assistant Professor of Mathematics) | |
| ROBERT EUGENE CUSHMAN, Ph.D. | Government |
| (Professor of Government) | |
| GEORGE IRVING DALE, Ph.D. | Spanish |
| (Professor of Romance Languages) | |
| ALEXANDER M. DRUMMOND, A.M. | Public Speaking |
| (Professor of Public Speaking) | |
| CHARLES LOVE DURHAM, Ph.D., Litt.D. | Latin |
| (Professor of Latin) | |
| LEAMAN ANDREW DYE, M.A. | Mathematics |
| (Instructor in Mathematics) | |
| THEODORE HILDRETH EATON, Ph.D. | Education |
| (Professor of Rural Education) | |
| JENNETTE EVANS, M.D. | Hygiene |
| (Assistant Professor of Hygiene and Medical Adviser of Women) | |
| ALBERT BERNHARDT FAUST, Ph.D. | German |
| (Professor of German) | |
| EMERY NELSON FERRISS, Ph.D. | Education |
| (Professor of Rural Education) | |
| CHARLES E. FINCH. | Education |
| (Director of Junior High School Grades, Rochester, N. Y.) | |
| ANGEL FLORES, M.A. | Spanish |
| (Instructor in Spanish) | |
| WILLIAM DANIEL FORGENG, B.Chem. | Chemistry |
| (Assistant in Chemical Microscopy) | |
| FRANK SAMUEL FREEMAN, Ed.D. | Education |
| (Assistant Professor of Education) | |
| LEO GERSHOY, Ph.D. | History |
| (Associate Professor of History, Long Island University) | |
| DAVID CLINTON GILLESPIE, Ph.D. | Mathematics |
| (Professor of Mathematics) | |
| ADRIAN GORDON GOULD, M.D. | Physical Education |
| (Assistant Professor of Hygiene and Assistant Medical Adviser) | |

THE SUMMER SESSION

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|---|-----------------|
| GUY EVERETT GRANTHAM, Ph.D. | Physics |
| (Assistant Professor of Physics) | |
| EDWIN HAROLD HADLOCK, M.A. | Mathematics |
| (Instructor in Mathematics) | |
| ANDREW COMSTOCK HAIGH | Music |
| (Assistant Professor of Music) | |
| CHARLES BROCKWAY HALE | English |
| (Associate Professor of English, University of Maryland) | |
| JACOB HIEBLE, M.A. | German |
| (Instructor in German) | |
| CARL JONES HOAGLAND, A.B. | Chemistry |
| (Assistant in Inorganic Chemistry) | |
| PAUL THOMAS HOMAN, Ph.D. | Economics |
| (Professor of Economics) | |
| IRA OWEN HORSFALL, A.M. | Mathematics |
| (Instructor in Mathematics) | |
| ALFRED GORDON HOUP | Chemistry |
| (Assistant in Inorganic Chemistry) | |
| WILLIAM VERMILLION HOUSTON, Ph.D. | Physics |
| (Associate Professor of Physics, California Institute of Technology) | |
| HARLEY EARL HOWE, Ph.D. | Physics |
| (Assistant Professor of Physics) | |
| MELVIN LOVELL HULSE, M.A. | Education |
| (Instructor in Education) | |
| WALLIE ABRAHAM HURWITZ, Ph.D. | Mathematics |
| (Professor of Mathematics) | |
| JOHN IRWIN HUTCHINSON, Ph.D. | Mathematics |
| (Professor of Mathematics) | |
| JOHN GAMEWELL JENKINS, Ph.D. | Psychology |
| (Assistant Professor of Psychology) | |
| EDGAR AUGUSTUS JEROME JOHNSON, Ph.D. | Economics |
| (Assistant Professor of Economics) | |
| JOHN RAVEN JOHNSON, Ph.D. | Chemistry |
| (Professor of Organic Chemistry) | |
| RIVERDA HARDING JORDAN, Ph.D. | Education |
| (Professor of Education) | |
| EARLE HESSE KENNARD, Ph.D. | Physics |
| (Professor of Physics) | |
| HORACE KIDGER, A.M., LL.B. | Social Science |
| (Head of Department of Social Studies, High School, Newton, Mass.) | |
| MAX LUDWIG WOLFRAM LAISTNER, M.A. | History |
| (Professor of Ancient History) | |
| ALBERT WASHINGTON LAUBENGAYER, Ph.D. | Chemistry |
| (Assistant Professor of Inorganic Chemistry) | |
| BERNARD LENROW, A.B. | Public Speaking |
| (Instructor in Public Speaking, Iowa State College) | |
| HOWARD SCOTT LIDDELL, Ph.D. | Physiology |
| (Professor of Physiology) | |
| FRANK EUGENE LUTZ, Ph.D. | Education |
| (Associate Curator and Curator of Entomology, American Museum of Natural History, New York City) | |
| ROBERT BRODIE MACLEOD, M.A. | Psychology |
| (Instructor in Psychology) | |
| FREDERICK GEORGE MARCHAM, Ph.D. | English History |
| (Professor of English History) | |
| MILTON DAVID MARX, Ph.D. | English |
| (Instructor in English) | |

STAFF OF INSTRUCTION

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| CLYDE WALTER MASON, Ph.D..... | Chemistry |
| (Assistant Professor of Chemistry) | |
| JAMES FREDERICK MASON, Ph.D..... | French |
| (Professor of the Romance Languages and Literatures) | |
| BENTON SULLIVAN MONROE, Ph.D..... | English |
| (Professor of English) | |
| CLYDE B. MOORE, Ph.D..... | Education |
| (Professor of Education) | |
| GLEN R. MORROW, M.A., Ph.D..... | Philosophy |
| (Professor of Philosophy, University of Illinois) | |
| GUY BROOKS MUCHMORE, A.B..... | Public Speaking |
| (Assistant Professor of Public Speaking) | |
| CARLETON CHASE MURDOCK, Ph.D..... | Physics |
| (Assistant Professor of Physics) | |
| D. E. MURRAY, A.B..... | Physical Education |
| (Director of Physical Education, Madison Junior High School, Rochester, N. Y.) | |
| FRANK L. MYERS..... | Physical Education |
| (Teacher, Bernardsville, New Jersey) | |
| CHARLES MERRICK NEVIN, Ph.D..... | Geology |
| (Assistant Professor of Geology) | |
| MELVIN LORREL NICHOLS, B.Chem., Ph.D..... | Chemistry |
| (Assistant Professor of Chemistry) | |
| CLARK SUTHERLAND NORTHUP, Ph.D..... | English |
| (Professor of English and Librarian of the Hart Memorial Library) | |
| EDWIN NUNGEZER, Ph.D..... | English |
| (Assistant Professor of English) | |
| PAUL MARTIN O'LEARY, A.M..... | Economics |
| (Assistant Professor of Economics) | |
| JAMES BECKLEY PALMER, Ph.D..... | Education |
| (Director, Department of Rural Education, State Normal School, Potsdam, New York) | |
| JACOB PAPISH, Ph.D..... | Chemistry |
| (Professor of Chemistry) | |
| LOUIS JOHN PARADISO, M.A..... | Mathematics |
| (Instructor in Mathematics) | |
| ANDREW PROSPER PELMONT, A.B..... | French |
| (Assistant Professor of the Romance Languages and Literatures) | |
| HAROLD CHARLES PERKINS, M.E..... | Mechanics |
| (Assistant Professor of Mechanics of Engineering) | |
| MILES ALBION POND, Ph.B..... | Descriptive Geometry |
| (Assistant Professor of Civil Engineering) | |
| SIDMAN P. POOLE, B.S., M.A., Ph.D..... | Geology |
| (Assistant Professor of Geology and Geography, Syracuse University) | |
| ERNEST WILLIAM RETTGER, Ph.D..... | Mechanics |
| (Professor of Mechanics of Engineering) | |
| GEORGE HOLLAND SABINE, Ph.D..... | Philosophy |
| (Professor of Philosophy) | |
| ERNEST WILLIAM SCHODER, Ph.D..... | Hydraulics |
| (World War Memorial Professor of Experimental Hydraulics) | |
| HERBERT HENRY SCOFIELD, M.E..... | Engineering |
| (Professor of Testing Materials) | |
| FRANCIS ROBERT SHARPE, Ph.D..... | Mathematics |
| (Professor of Mathematics) | |
| KENNETH WAYNE SHERK, A.B..... | Chemistry |
| (Assistant in Chemical Spectroscopy) | |
| DEAN FRANKLIN SMILEY, M.D..... | Hygiene |
| (Professor of Hygiene and Medical Adviser) | |

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|---|------------------------|
| STANLEY BARNEY SMITH, A.B., Ph.D..... | Classics |
| (Professor of Classics, Bowdoin College) | |
| VIRGIL SNYDER, Ph.D..... | Mathematics |
| (Professor of Mathematics) | |
| H. A. SPENCER, M.A..... | Music |
| (Supervisor of Music, Niagara Falls, N. Y.) | |
| HERBERT EARL SPENCER, M.A..... | Mathematics |
| (Instructor in Mathematics) | |
| L. E. SPOCK, Ph.D..... | Geology |
| (Assistant Professor of Geology, New York University) | |
| WALTER HUTCHINSON STANTON, A.B. | Public Speaking |
| (Assistant Professor of Public Speaking) | |
| RAYMOND S. STITES..... | Drawing and Painting |
| (Professor of Drawing, Antioch College) | |
| WALTER KING STONE..... | Drawing and Painting |
| (Assistant Professor of Drawing) | |
| WILLIAM STRUNK, Jr., Ph.D..... | English |
| (Professor of English) | |
| RALPH COLTON TALLMAN, Ph.D..... | Chemistry |
| (Instructor in Chemistry) | |
| FRANK TANNENBAUM, Ph.D..... | Economics |
| (Brookings Institute, Washington, D. C.) | |
| VIVIAN T. THAYER, Ph.D..... | Education |
| (Educational Director, Ethical Culture Schools, New York City) | |
| CHARLES KENNETH THOMAS, A.B..... | Public Speaking |
| (Assistant Professor of Public Speaking) | |
| HAROLD W. THOMPSON, Ph.D., D.Litt., F.S.A..... | English |
| (Professor of English, New York State College for Teachers) | |
| LEONARD CHURCH URQUHART, C.E..... | Structural Engineering |
| (Professor of Structural Engineering) | |
| PAUL WENDELL VITTMUM, A.B..... | Chemistry |
| (Assistant in Organic Chemistry) | |
| OSCAR DIEDERICH VON ENGELN, Ph.D..... | Geography and Geology |
| (Professor of Physical Geography) | |
| RUSSELL HALDERMAN WAGNER, Ph.D..... | Public Speaking |
| (Assistant Professor of Public Speaking) | |
| KENNETH LELAND WASHBURN, B.F.A..... | Drawing and Painting |
| (Instructor in Freehand Drawing) | |
| PAUL J. WEAVER, B.A..... | Music |
| (Professor of Music) | |
| HARRY PORTER WELD, Ph.D..... | Psychology |
| (Professor of Psychology) | |
| ARTHUR PRESTON WHITAKER, Ph.D..... | History |
| (Professor of American History) | |
| CHARLES OLIVER WILLITS, M.S..... | Chemistry |
| (Assistant in Quantitative Analysis) | |
| ARTHUR LENSEN WOEHL, Ph.D..... | Public Speaking |
| (Assistant Professor of Speech, Hunter College) | |
| KARL DAWSON WOOD..... | Mechanics |
| (Assistant Professor of Mechanical Engineering) | |
| CHARLES VAN PATTEN YOUNG, A.B..... | Physical Education |
| (Professor of Physical Education and Director of the Gymnasium) | |
| KARL ABELL ZELLER, Ph.B., M.A..... | Physics |
| (Teacher of Science, High School, Columbus, Ohio) | |

OBJECT OF THE SESSION

INSTRUCTION ADAPTED TO VARIOUS NEEDS

The primary object of the Summer Session is to advance education by helping those engaged in it. The instruction is adapted to the needs of the following classes:

1. Professors and teachers in colleges and schools, superintendents, and supervisors of special branches of instruction.

The announcements of the different departments show a wide range of work. This work is either advanced and, therefore, suited to specialists who wish to pursue their individual study; or more elementary and adapted to teachers who desire to start in a new field. In addition to the instruction of the classroom, the University's libraries, museums, laboratories, and shops are open for use.

2. College students in Cornell or other universities who wish to make some scholastic use of the long vacation, especially those whose college studies may for one reason or another have been interrupted. Graduates may count some of the courses toward an advanced degree. See the Announcement of the Graduate School with regard to opportunities for advanced work and research during the summer.

Undergraduates who are in good standing academically may anticipate requirements and thereby shorten their course, or may make up existing deficiencies. The conditions for receiving credit, and the amount which may be obtained, are stated below, under the head of Academic Credit for Work.

3. Students entering the University and wishing to obtain surplus credit at entrance, or to complete the entrance requirements.

It often happens that students have in June more or less than the requirements for admission to college. The Summer Session affords them the opportunity either to add to their surplus and thus, in some cases, to gain a year in time; or to make up their deficiency.

4. All persons qualified to pursue with profit any course given, whether or not they are engaged in formal study or teaching.

ACADEMIC CREDIT FOR WORK

IN THE COLLEGE OF ARTS AND SCIENCES

The academic requirements for the degree of Bachelor of Arts are the completion of one hundred and twenty hours of elective work. Before graduation a student must complete six hours in each of certain specified groups of study, thirty of these hours during the first two years, under certain restrictions (the underclass requirements). During his last two years he must also elect twenty hours in some one department or group of related departments (the upperclass requirements).

To obtain credit toward the Cornell degree by means of work done in Summer Sessions, a student must have previously satisfied the entrance requirements of the College, and must obtain in advance the

Dean's approval of his selection of courses. He may then obtain in any Summer Session credit for the number of hours he passes, with a minimum of four or a maximum of eight in each Session. Credit for thirty hours, but no more, may be secured in this way.

The Summer Session records of students registered in the College of Arts and Sciences are reviewed by the usual standing committees of the College, and poor records in the Summer Session are liable to the same penalties as in the regular University session.

The foregoing regulations apply to students matriculated at Cornell. Undergraduates enrolled in other institutions and wishing to have credits earned in the Summer Session applied on their work at such other institutions should, before coming to Ithaca, consult their own college authorities and make all arrangements by them deemed necessary. The Cornell Summer Session can assume no responsibility for the use to be made of credits earned by students thus coming from other places of study. The certificates mentioned on page 12 will show what courses have been taken, the amount of credit in terms of Cornell "hours," and the grades.

IN OTHER COLLEGES OF THE UNIVERSITY

The nature and amount of credit allowed in other colleges at Cornell for work in the Summer Session may be learned from the statements under the announcement of each course.

IN THE GRADUATE SCHOOL

A graduate of any college whose requirements for a first degree are substantially equivalent to those for the first degree at Cornell may be admitted to resident study in the Graduate School. He may at once enter upon candidacy for an advanced degree if he is able to show that he has had adequate preliminary training in the subjects in which he proposes to work. The requirements for the degree do not depend primarily on the completion of any prescribed number of courses or of a fixed term of residence. They are rather based upon actual achievement in scholarship and research in the fields indicated by the major and minor subjects. The writing of a thesis and the passing of a special examination are also required; except that for the degrees of Master of Arts in Education and Master of Science in Education the thesis may be waived in consideration of certain other requirements.

Not all work done by a graduate student is graduate work in the strict sense of the term. Graduate work to be considered acceptable for a degree must be of advanced character in some field or department of knowledge. No residence towards a master's degree will be granted any student who does not register with the Dean of the Graduate School within three days after the opening of the Session, and who does not formally become a candidate for this degree under the direction of a special committee; see below. The latest day for such registration in 1932 is July 14.

Students of the University Summer Session, of the Summer School of Biology, and of the New York State Summer Session who have been admitted to candidacy for an advanced degree are required to pay the regular tuition fee of the session, sixty dollars; but see below, page 14. On registering for the first time as candidates, students who have not previously matriculated in Cornell University will pay in addition the regular matriculation fee of ten dollars. See the full statement about tuition and fees in the Graduate School on page 14.

The residence requirements for the Master's degree may be fulfilled in whole or in part by attendance during the Summer Session of the University. For this purpose, two Summer Sessions will be regarded as the equivalent of one term, and four Summer Sessions as the equivalent of one year, the minimum period of residence for this degree. Candidates for this degree who are in residence during Summer Sessions only are also required to continue their studies during the year under the direction of the chairman of the special committee in charge of their work.

The residence requirements for the Doctor's degree may, upon recommendation of the student's special committee, be fulfilled in part by attendance during the Summer Session. For this purpose, two summer sessions will be regarded as the equivalent of one term, and four summer sessions as the equivalent of one year. The last year of required residence must be spent in study during regular sessions at Cornell University.

Any person wishing to become a candidate for an advanced degree and to study during the Summer Session is advised to write to the professor whose work he expects to take, and also to the Dean of the Graduate School, asking for a blank form of application for admission to the Graduate School. It is much better to make these arrangements before coming to Ithaca, thus avoiding delay and interruption of study after the Summer Session has begun. In this way, moreover, it may be possible to secure the advice and guidance of professors in fields of study of which no specific mention is made in the announcements. Not all departments formally offer graduate work. In some departments, notably in the Summer School of Biology, opportunities for research may be had for a longer period than the six weeks during which courses are formally conducted.

Each student, upon entering the Graduate School, must choose a field of study. Within that field, the branch of knowledge to which he intends to devote the larger part of his time is termed his major subject; the other subject or subjects, which will necessarily be more restricted in their scope and which should be selected with reference to their bearing on the major subject, are termed the minor subjects.

The degree of Master of Arts in Education and of Master of Science in Education is offered to candidates regularly qualified to enter

the Graduate School. These degrees are designed for school executive officers and teachers who do not wish to enter upon the more restricted program of study involving intensive research, or who wish to supplement previous training in order to meet advanced professional requirements for certification. Suggested programs of study for such candidates have been prepared, subject to modification to suit individual needs. Complete information regarding such programs may be obtained by addressing the Director of the Graduate School of Education, Stone Hall, Ithaca, N. Y.

The work of each graduate student who is a candidate for an advanced degree is in charge of a special committee consisting of the teachers under whom his major and minor studies are pursued, a representative of his major subject being chairman. The student is expected to confer freely with the members of his special committee, both in regard to the general plan of his work and in connection with individual courses of study. A student upon registering in the Summer Session with the intention of doing graduate work as a candidate for an advanced degree must also register with the Dean of the Graduate School and present to him a statement of his major and minor subjects approved by the members of his special committee.

In certain departments an invitation is issued to scholars who are beyond the stage of regular graduate study to make use of the resources of the University in these fields for carrying on research.

CERTIFICATES FOR WORK DONE

Students of the Summer Session who are not matriculated in the University may receive certificates of attendance and of work satisfactorily performed. Application for them must be made before August 10, and the applicant must leave at the office of the Registrar a large-sized envelope stamped and directed to his home address. The certificate will then be forwarded by mail. The regulations of each department for the granting of a certificate must be met.

GENERAL INFORMATION

CONDUCT AND SCHOLARSHIP

The Summer Session is conducted under the same general regulations concerning conduct and scholarship as apply during the academic year. For this reason students are requested to familiarize themselves with dormitory and other rules, and to abide by them. The officers of the University also reserve the right to cancel the registration of any student at any time for neglect of scholastic duties. The rules governing student conduct are:

"A student is expected to show both within and without the University unflinching respect for order, morality, personal honor, and the rights of others. The authority to administer this rule and to impose penalties for its violation is vested in the University Committee on Student Conduct. The rule is construed as applicable at all times, in all places, to all students of the University. A student may at any time be removed from the University if, in the opinion of the Committee on Student Conduct, his presence is not conducive to the University's best interests."

ADMISSION

There are no examinations for admission to the Summer Session. Each person must, however, satisfy the instructor in charge of every course he intends to take, unless it be elementary, that he is qualified to pursue the work.

An undergraduate student who is registered in an institution other than Cornell and who wishes to enter the Summer Session must secure from his dean or other competent authority a certificate of good standing. Students on probation and students whose names have been removed from the rolls of the institution are regarded as not in good standing and accordingly are not admitted. A blank form of certificate may be had on application to the Secretary of the Summer Session.

Undergraduate students who are on probation or whose names have been removed from the rolls of any college at Cornell University are not admitted to the Summer Session except upon the recommendation of the college concerned.

There are some special requirements to be met by applicants for admission to the summer session of the Law School, and such persons should consult the separate announcement of that session.

Admission to the classrooms during the Summer Session is restricted to students duly registered for the session. A student thus duly registered may occasionally visit any class; but if he wishes to attend regularly without credit he must secure special permission from the Chairman of the Summer Session. Such permission will be granted only when the student can show a serious purpose in such attendance.

If a student entering the Summer Session wishes his work to count toward a degree, there are certain regulations that he must comply with, and he will find them set forth under the head of Academic Credit for Work, page 9.

REGISTRATION

All students of the Summer Session are required to register with the Registrar of the University. The hours and places of registration are given in the Calendar of the session, on page 3. Students may register on Monday, July 11, between 8 A. M. and 5 P. M., or on the day of their arrival, if they reach Ithaca on July 12, or later. They are urged to register on July 11. Registration before that day is not required, and it is not necessary to apply in advance for registration blanks.

Beginning on Tuesday, July 12, the Registrar's office in Morrill Hall will be open from 9 A. M. till 4 P. M. every week day except Saturday, when it will be closed at noon.

Students who wish to obtain credit for graduate work done during the Summer Session must register not only with the Registrar but also with the Dean of the Graduate School, at his office in Room 22, Morrill Hall.

Persons who are to take courses in the New York State Summer Session and in any department of the Summer Session of the University must register for both the Summer Session and the New York State Summer Session. They are required to pay only one tuition fee.

TUITION

The charge for tuition in the Summer Session of the University is sixty dollars. In the summer session of the Law School it is seventy dollars.

The tuition fee is payable in full, on the first registration day or within the next five days, at the office of the Treasurer, Morrill Hall.

Students in the Graduate School are required to pay fees as follows:

An administration fee of \$12.50 for each term of the academic year; and of \$6.25 for each Summer Session or for work during the summer under personal direction.

A tuition fee of \$75 for each term of the regular academic year, and of \$30 for each summer session; with the exception that any student undertaking graduate work for the first time at Cornell in a summer session, shall pay a summer session tuition fee of \$60 for such first summer's work, and of \$30 for each subsequent summer session.

If taking work in any of the summer courses all students must register both in the Graduate School and such summer course or courses, and pay a tuition fee equal to that of the University Summer Session.

No student shall receive the master's degree who has not paid tuition equivalent at least to one academic year, during the academic year, or summer courses, or both; and no one shall receive the doctor's

degree who has not paid tuition for the equivalent of at least three academic years, unless one or more of the years spent in study for the doctor's degree shall have been spent in approved graduate study at another university—but in any event at least the equivalent of one academic year's tuition must be paid while in graduate study at the University.

To be specific, a candidate for the degree of Master of Arts will pay a tuition fee of \$60 (plus an administration fee of \$6.25) for his first summer, and of \$30 (plus an administration fee of \$6.25) for each succeeding summer.

On registering for the first time as a candidate, a student who has not previously matriculated in Cornell University, must pay a matriculation fee of \$10.00 in addition to any other fees. This fee is not refundable.

If registered during the summer under personal direction students are required to register with the Registrar as well as in the Graduate School and to pay an administration fee of \$6.25.

Students registered under personal direction during the summer who desire residence credit for their work, must pay tuition for the credit desired pro rata at the rate charged for the regular academic year, such payment to admit them to the current summer session classes without additional tuition payments. Students registered under personal direction during the summer, not for credit, are exempt from the payment of tuition, but may not attend either as visitors or for subsequent credit, any of the classes or exercises of the summer session.

Any student who fails to pay his tuition charges, other fees, and other indebtedness to the University, or who, if entitled to free tuition, fails to claim it at the Treasurer's office and to pay his fees and other indebtedness, within the prescribed period of grace, is thereby dropped from the University unless the Treasurer has granted him an extension of time to complete payment. The Treasurer is permitted to grant such an extension, when in his judgment, the circumstances of a particular case warrant his doing so. For any such extension the student is assessed a fee of \$5 for the first week and \$2 additional for each subsequent week in which the whole or any part of the debt remains unpaid, but the assessment in any case is not more than \$15. The assessment may be waived in any instance for reasons satisfactory to the Comptroller and the Registrar, when such reasons are set forth in a written statement.

If a student withdraws from the Summer Session, the Treasurer may refund a part of the tuition fee or cancel a part of the obligation that the student has incurred for tuition, provided the reason for the withdrawal be stated in writing and be satisfactory to the Comptroller and the Registrar. In such a case the student is required to pay twenty-five per cent of the term's tuition for each week or fraction of a week between the first registration day and the date of his certificate of withdrawal.

Students registering at any time during the last four weeks of the Summer Session or of either term of the summer session of the Law School are required to pay for the remainder of the term at the rate of twenty-five per cent of the term's tuition for each week or fraction of a week between the date of registration and the last examination day of the term.

Any tuition fee or other fee may be changed by the Trustees to take effect at any time without previous notice.

IN THE NEW YORK STATE SUMMER SESSION

Tuition in any of the undergraduate courses of the Summer School of Agriculture and of the Summer School of Home Economics is free to admitted students who are residents of the State of New York and who have been residents for at least one year immediately preceding registration. *An incidental fee of ten dollars* is, however, charged to all students for admission. Students from outside the State of New York, whether they take one subject or more, are required to pay sixty dollars, in which is included the incidental fee.

Free tuition does not include instruction in the Summer School of Biology or any instruction outside the College of Agriculture and the College of Home Economics, nor are students receiving free tuition permitted to attend classes outside the College of Agriculture and the College of Home Economics.

Graduate students who register in the New York State Summer Session as candidates for advanced degrees are required to pay the regular tuition fee for graduate students as explained on page 14. If they have not previously matriculated in Cornell University, they must also pay a matriculation fee of ten dollars. See page 15.

OTHER FEES

In *Chemistry* a laboratory fee is charged for material actually consumed. A deposit of such amount as the instructor may prescribe must be made with the Treasurer.

Physics. For laboratory fees in physics see descriptions of courses.

In *Geography and Geology*, in Course S 8 and in Course S 9 a fee of one dollar must be paid in advance to the Treasurer to cover incidental expenses of the course.

In *Drawing and Painting*, Course S 7, a fee of ten dollars is required.

In *Public Speaking*, Course S 45, a special laboratory fee of five dollars is required.

Biology. A laboratory fee is charged for each course in Biology, the fee varying with the character of the course. The amount which the student must expect to pay upon beginning any course is stated in the description of that course, under the head of Summer School of Biology, page 60.

Tennis. A special charge of ten dollars is made for instruction in Tennis.

Shop-work. Students not matriculated in the College of Engineering of Cornell University are required to pay a fee of \$3.50 for each credit hour of shop-work for which they register.

Library. A person who obtains the privilege of taking books from the University Library for home use is required to make a deposit of five dollars, which will be refunded upon the return of all books taken out.

Willard Straight Hall. A fee of three dollars is charged for the privileges of Willard Straight Hall. See page 21.

RESIDENTIAL HALLS: ROOMS: BOARD

FOR WOMEN

The University has three groups of residential halls for women in which board and room can be obtained during the Summer Session by registered students only. They are:

Sage College, which accommodates 175 persons. Here the charge for room and a specified amount of laundry, for the session, is from \$27 to \$42, according to the size and location of the room.

Prudence Risley Hall, which accommodates 184 persons. Here the charge for room, board, and a specified amount of laundry, for the session, is from \$87 to \$96, according to the size and location of the room.

The Balch Halls (four units), which accommodate 318 persons. Here the charge for board, room, and a specified amount of laundry, for the session, is \$101.

Besides these halls, there are certain *approved houses* which are occupied exclusively by women and which, like the halls, are under the direct supervision of the Dean of Women.

Undergraduate women students of Cornell and other colleges and other women students under twenty-one years of age are expected to live in the residential halls or the approved houses. Any woman student should consult the Dean of Women before engaging a room.

In the residential halls for women the charge for room and board includes dinner and lodging Saturday night, July 9 (not earlier), and all meals to and including breakfast Saturday, August 20.

Members of the Summer Session who lodge outside Prudence Risley Hall and the Balch Halls may obtain table board at any of those halls for \$10 a week.

Each of the residential halls is in charge of a warden, who is glad to know the students, to advise them in illness or other emergency, and to give them whatever information they wish about the University or the town. It is understood that persons living in the halls will conform to the house regulations made for the convenience and comfort of all.

Application for rooms in any of the residential halls or approved houses for women should be made to the Manager of Residential Halls, Morrill Hall, Ithaca, N. Y. Information about such rooms may be obtained from the Manager in advance of the application. The list of approved houses will be available after June 1 on application to the Manager, and also, if desired, a supplementary list of private houses with desirable rooms available for mature women who prefer to live outside any of the halls or approved houses. Checks should be drawn to the order of Cornell University.

A deposit of five dollars must accompany each application for a room in any of the residential halls; otherwise the application will not be entertained. The rooms are reserved in the order of application. If

a room assigned is occupied by the applicant, the amount of the deposit is held until the end of the session to cover the return of keys and any damage to building or furniture other than ordinary wear and tear, and to insure the completion of the lease. The deposit will be refunded if the applicant gives formal notice to the Manager on or before June 15 that she wishes to withdraw her application.

FOR MEN

Men regularly enrolled in the Summer Session can obtain comfortable rooms in the Residential Halls for Men, which are thoroughly modern and of fireproof construction.

In the *Residential Halls* the charge for furnished room, including care of the room and laundry of bed linen, is \$21 for the session. There are a few suites at a higher rate, and some rooms on the top floor may be had for less.

Board can be obtained for an average of \$1 to \$1.50 a day in Willard Straight Hall or in other dining rooms or restaurants on or near the campus.

Applications for rooms in the Residential Halls for Men, or for plans of the rooms or other information about them, should be made to the Manager of Residential Halls, Morrill Hall, Ithaca, N. Y. Checks should be drawn to the order of Cornell University.

A list of private houses offering desirable rooms for rent for the session can be obtained after June 1 by application to the Manager of Residential Halls, Morrill Hall, Ithaca, N. Y.

THE COST OF LIVING

An estimate of the cost of living in Ithaca in the summer can be made by consulting the figures given above. In a private house a student may be able to rent a room at a little less cost for the session than in one of the residential halls. Rooms are rented with the understanding that they will be occupied for the entire session unless both parties agree otherwise. Table board is generally engaged by the week.

MEANS OF SELF-SUPPORT

Students, either men or women, who wish to earn a part of their expenses during the session are invited to correspond in advance with the Manager of Residential Halls, Morrill Hall, Ithaca.

THE CASHING OF CHECKS

The Treasurer of the University accepts checks in settlement of charges payable at his office, but a rule of the Board of Trustees forbids him to cash any credit instrument, even to the extent of accepting a check or draft in amount greater than the sum due and return-

ing the excess in cash. Students are therefore advised to open an account in an Ithaca Bank as soon as they arrive in town, or else provide themselves with travelers' checks, drafts on New York City banks, money orders, or other form of credit instrument such as a bank will cash in the ordinary course of business.

THE STUDENT'S HEALTH

MEDICAL ADVICE

The University's staff includes medical advisers of men and of women, with a corps of assistants. The medical advisers observe regular office hours, from 9 A. M. till 1 P. M. daily, at the medical offices in the Old Armory. A trained nurse is on duty from 2 P. M. till 4 P. M. daily. No charge is made for these services.

In cases of illness or indisposition which involve absence from classes even for one day, students are expected to report immediately either in person, by telephone, or by messenger to the medical adviser's office. For the convenience of the adviser such illness should be reported early in the day. Students indisposed but still able to attend classes should consult the medical adviser immediately in order that advice may be given and that diagnosis of incipient diseases may be made promptly. Any student failing to report as soon as possible to the medical adviser any contagious or infectious disease will be regarded as guilty of a serious breach of discipline.

A medical examination is not required of students in the Summer Session.

A student may at any time be requested to withdraw from the University if, in the opinion of the University authorities, the condition of his health is such as to make it unwise for him to remain.

Every student matriculating in Cornell University must present a certificate showing that he has been vaccinated within five years. Students in the Summer Session are not matriculated students and of them accordingly such vaccination certificate is not required. If, however, students attending the Summer Session should matriculate in any of the colleges of the University or in the Graduate School, they must give evidence of recent vaccination like others so matriculated.

THE UNIVERSITY INFIRMARY

The University Infirmary occupies three large buildings near the campus. The first of these, a brownstone structure, was the home of Henry Williams Sage, for many years chairman of the Board of Trustees of the University. After his death in 1897, his sons, Dean and William Henry Sage, endowed it and gave it to the University for a student's infirmary as a memorial to their father. The second building, the Schuyler House, was purchased in 1911; in 1912 the Trustees erected a third building, fireproof, and this is the present main hos-

pital building. The normal capacity of the Infirmary is seventy-five beds; the number can be doubled in an emergency.

The Infirmary, which is in charge of an experienced superintendent and is thoroughly equipped, provides suitable rooms, food, and nursing for sick students. It has no medical staff; students find their own physicians among practitioners in Ithaca or elsewhere.

Students in the Summer Session have all the privileges of admission to the Infirmary. They pay no fee in advance, but are liable to regular charges for services rendered.

THE LIBRARIES

The University Library is open on week days from 8 A. M. till 10:30 P. M. In this building are the main library, containing about 500,000 volumes, and most of the seminary and special libraries. The main reading room affords accommodations for more than two hundred readers, and contains a selected library of about 8,000 volumes of reference works. Below stairs is the periodical room in which are kept the current numbers of about 500 journals in various fields of knowledge. These rooms are open to all students. Students properly qualified are allowed the use of the seminary rooms and the books in them. The main collection is primarily a library of reference for use in the building. Students are, however, to a limited extent, allowed to take out books for home use. Persons wishing this privilege must make a deposit of \$5, which will be refunded upon the return of all books taken out.

The reference library in Goldwin Smith Hall is open for the use of summer students from 9 A. M. till 5 P. M. on week days except Saturday, when it is closed at noon.

The library of the Law School numbers more than 56,000 volumes and about 5,800 pamphlets, to which generous additions are made yearly. It includes the library of the late Nathaniel C. Moak of Albany, N. Y., which was presented in 1893 by Mrs. A. M. Boardman and Mrs. Ellen D. Williams, as a memorial to Judge Douglas Boardman, the first dean of the School. In reports of the federal courts, and of the several American state jurisdictions, and in English, Scotch, Irish, Canadian, Australian, and English colonial reports, the law library is practically complete to date.

The Library of the College of Agriculture, in the basement of Stone Hall, is open on week days from 9 A. M. till 5 P. M., except Saturday, when it is closed at 1 P. M. In it will be found a large collection of bulletins and reports of experiment stations, reference books on agriculture and country life, agricultural periodicals, and the like. The entomological library, in the department of entomology on the fourth floor of Roberts Hall, is one of the most complete of its kind in the United States. Nearly all of the departments in which instruction is given have well-selected departmental libraries.

WILLARD STRAIGHT HALL

All privileges of Willard Straight Hall, the social center of the University, are open to Summer Session students, both men and women, as during the regular college year. In accordance with regular procedure, a fee of \$3 is required of all summer registrants, payable at the time of the regular tuition fee.

SAGE CHAPEL

Religious services are conducted in Sage Chapel throughout the academic year by clergymen of various religious denominations. There will be services in the Chapel on five Sundays during the Summer Session, July 17 to August 14 inclusive.

LECTURES: MUSICAL RECITALS: EXCURSIONS

In addition to the regular classroom work there will be general public lectures on Monday evenings, and also lectures of general interest each week in connection with the work of various departments. They will be all announced in the Weekly Calendar.

Organ recitals will be given on Tuesday evenings in Sage Chapel and on Sunday evenings in Bailey Hall. Piano recitals will be given each week in Willard Straight Hall. These entertainments are free to all students.

Wednesday evenings are devoted to the departmental conferences, which are open to all interested persons. Notice of these conferences will be given from week to week.

Excursions, in connection with the work of certain departments, are made to many points of interest. Some of them are open to all members of the Summer Session. Especially noteworthy are the excursions to Watkins Glen and to Niagara Falls.

RAILROAD ROUTES TO ITHACA

Ithaca can be reached from New York City by either the Delaware, Lackawanna & Western or the Lehigh Valley Railroad. On both roads there are good trains, with Pullman cars, both night and day. Passengers from the west reach Ithaca by way of the Lehigh Valley Railroad from Buffalo. From stations on the Boston & Albany Railroad, the shortest route to Ithaca is by way of Syracuse and Auburn. From Philadelphia, and from Baltimore, Washington, and the south by way of the Baltimore & Ohio, the Philadelphia & Reading connects with the Lehigh Valley at Bethlehem. From stations on the Erie, connections with Ithaca can be made either by the Lackawanna at Owego or by the Lehigh Valley (Elmira and Cortland branch) at Elmira. Ithaca has connections with the New York Central at Geneva, Auburn, and Canastota.

COURSES OF INSTRUCTION

Subjects of instruction are in alphabetical order.

Most of the courses consist of five exercises a week, or one hour each week day except Saturday. The number of actual hours of class work in any course can be found by multiplying the number of weekly exercises by six.

Since instruction begins on Tuesday, all classes scheduled for five meetings a week will meet as usual on the first Saturday, July 16.

GS signifies *Goldwin Smith Hall*.

ASTRONOMY

S 1. General Astronomy. Credit two hours. Lectures and recitations, daily except Sat., 8. *Lincoln* 31. Professor BOOTHROYD.

S 2. Laboratory Astronomy. Credit one hour. Laboratory, T and Th, 7:30 to 10 p. m. *Observatory*. This course must be preceded or accompanied by Course S 1. Professor BOOTHROYD.

These two courses together offer an introduction to astronomical ideas and methods and give an especially good background for teachers who may wish to prepare more thoroughly for teaching general science or geography. Those who take both courses may count the three hours toward fulfilling the requirement of Group 4 in the College of Arts and Sciences.

The lectures are illustrated by models and by lantern slides. The 12-inch equatorial and other instruments of the Observatory are used for observation and instruction.

Fath's *Elements of Astronomy* and Thomas's *Heaven and Earth* are used as reference books in Course S 1; and Stetson's *Manual of Laboratory Astronomy* is used along with Fath's *Elements of Astronomy* in Course S 2.

CHEMISTRY

The courses announced below correspond entirely or in part with courses given during the regular sessions of the University. For regular students the requirements for admission to the various courses will be the same as during the year.

Teachers may be admitted to any course for which their general training or experience may be considered to prepare them. Every effort will be made to meet the individual needs of teachers by arranging and modifying the work as far as possible so as to fulfill the particular requirements in each case.

All courses in Chemistry are given in the *Baker Laboratory of Chemistry*.

S 101. Introductory Inorganic Chemistry. Credit three hours. Lectures, daily except Sat., 12. Ten additional lectures at hours to be arranged. *Main Lecture Room*. Professor BROWNE and Mr. HOUPP.

The lectures deal with the fundamental theories and laws of chemistry, and with the more common elements and their compounds. They are profusely illustrated by experiments. The course is primarily designed to meet the needs of teachers in secondary schools, and to that end emphasis is laid upon methods of lecture presentation and experimental demonstration. Students other than teachers must, before registering, satisfy the department that they are properly prepared to carry on the work.

S 105. Introductory Inorganic Chemistry. Recitations and laboratory practice. Credit three hours.

Laboratory, M W, 8 12, and T Th F, 9-12. *Rooms* 177 and 150. Assistant Professor LAUBENGAYER and Mr. HOAGLAND. A series of experiments designed to illustrate the fundamental laws of chemistry and to acquaint the student with the properties of the principal elements and their compounds. For the benefit of teachers who may take the course special attention will be given to the methods of laboratory instruction, quantitative experiments, and the blowing of simple glass apparatus.

Recitations, T Th F, 8. *Room 22.* Assistant Professor LAUBENGAYER and Mr. HOAGLAND. The recitations deal with the subject matter of the lectures and with the experimental work in the laboratory and afford thorough drill in the solution of chemical problems.

S 205. Introductory Qualitative Analysis. Credit three hours. Must be taken with course S 206. Lectures and recitations, daily except S, 8, T Th, 11. *Room 22.* Mr. AVENS.

A study of the application of the theories of general chemistry to the systematic separation and detection of the common elements and acid radicals.

S 206. Introductory Qualitative Analysis. Credit three hours. Must be taken with course S 205. Laboratory, daily except S, 1:40-4, and M W, 9-12:30. *Room 50.* Mr. AVENS and Mr. BAKER.

A study of the properties and reactions of the common elements and acid radicals; the qualitative analysis of a number of solutions and solid compounds.

S 210. Introductory Qualitative Analysis. Shorter course. Lectures and laboratory practice. Credit three hours. Lectures, M W F, 11. *Room 22.* Mr. AVENS. Laboratory, daily except S, 1:40-4. *Room 50.* Mr. AVENS and Mr. BAKER.

The properties and reactions of the common elements and acids, and their detection in various liquid and solid mixtures.

S 220. Introductory Quantitative Analysis. Credit three hours. Must be taken with course S 221. Lectures and recitations, daily except S, 8. *Room 202.* Assistant Professor NICHOLS.

A study of the fundamental principles of gravimetric and volumetric analysis with practice in stoichiometry.

S 221. Introductory Quantitative Analysis. Credit three hours. Must be taken with course S 220. Laboratory, daily except S, 9-1. *Room 294.* Assistant Professor NICHOLS and Mr. WILLITS.

Laboratory practice in the preparation and standardization of various volumetric solutions and the analysis of a variety of substances by volumetric and gravimetric methods.

S 225. Introductory Quantitative Analysis. Shorter course. Lectures and laboratory practice. Credit three hours. Lectures, T Th, 11. *Room 207.* Assistant Professor NICHOLS. Laboratory, daily except S, 8-11. *Room 294.* Assistant Professor NICHOLS and Mr. WILLITS.

The preparation and use of volumetric solutions and work in elementary gravimetric analysis.

S 230. Advanced Quantitative Analysis. Recitations and laboratory practice. Credit two to four hours. Laboratory, daily except S, 8-1. *Room 294.* Assistant Professor NICHOLS and Mr. WILLITS.

Gravimetric, volumetric, and electrolytic methods of analysis, and methods of combustion analysis; the calibration of weights and volumetric apparatus, analysis of iron and steel alloys, silicates, etc.

S 305. Introductory Organic Chemistry.

It is recommended that S 305 A and S 310 A be taken in one summer, and that S 305 B and S 310 B be taken in the following summer. In exceptional cases S 305 A, S 310 A, and S 305 B, but not S 310 B may be taken together, by special permission.

A. First term. Credit three hours. Lectures and written reviews. Daily, 8. *Room 207.* Professor JOHNSON.

B. Second term. Credit three hours. Lectures and written reviews. Daily, 9. *Room 302.* Open to those who have had S 305 A. Dr. TALLMAN.

The lectures discuss systematically the more important compounds of carbon, their occurrence, methods of preparation, reactions, relations, and uses.

S 310. Introductory Organic Chemistry.

A. First term. Credit one to three hours. Laboratory practice and oral reviews. Open to those who have had or who are taking S 305 A. Hours to be arranged, in the mornings. Dr. TALLMAN and Mr. VITTM.

B. Second term. Credit one to three hours. Laboratory practice and oral reviews. Open to those who have had S 305 A and S 310 A. Hours to be arranged, in the mornings. Dr. TALLMAN and Mr. VITTUM.

The student prepares a number of typical compounds and familiarizes himself with their properties, reactions, and relations.

S 320. Advanced Organic Chemistry. Credit two or more hours. Laboratory practice at hours to be arranged, in the mornings. Professor JOHNSON.

An advanced course in the preparation of organic compounds, involving the use of the more difficult classical methods and of the less common reagents.

S 375. Introductory Organic Chemistry. Shorter Course. Lectures and written reviews. Daily, 8. Room 207, throughout the session, and also daily, 9, during the latter part of the session only. Professor JOHNSON.

A shorter course in organic chemistry, designed for students in home-economics, pre-medical, biological, and agricultural curricula. Required of students in certain of these curricula. Credit four hours for lectures and written reviews.

Laboratory practice. Credit one or two hours. Hours to be arranged, in the mornings. Dr. TALLMAN and Mr. VITTUM.

Students preparing for the study of medicine should learn the requirements in Organic Chemistry of the medical school which they intend to enter, and if more than six hours of credit are required, should register in Chemistry 305 and 310.

S 405. Introductory Physical Chemistry.

A. Credit three hours. Lectures, daily except S, 8, and two other lectures at hours to be arranged. Room 7. Professor BRIGGS. A systematic presentation of modern chemical theory. The subject matter includes: gases, liquids, and solids; chemical equilibrium in homogenous and heterogeneous systems; the phase rule and its applications; the theory of solution; the elements of thermochemistry and thermodynamics.

B. Credit three hours. Lectures, daily except S, 9, and two other lectures at hours to be arranged. Room 7. Professor BRIGGS and Mr. CONGDON. A continuation of Part A. The subject matter includes the theory of solution; ionic equilibria; reaction velocity and catalysis; elementary electrochemistry; the application of the phase rule to systems of two and three components.

S 410. Physical Chemistry Laboratory. A. Credit three hours. Laboratory practice, daily except S, 8-1. Room 1. Professor BRIGGS and Mr. CONGDON. Open only to those who have taken or are taking course S 405A or its equivalent. With the data obtained in the laboratory as a basis, detailed reports are written covering each of the following topics: molecular weight determination by vapor density; boiling point and freezing point methods; vapor pressure; viscosity; distillation of liquid mixtures.

B. Credit three hours. Laboratory practice, daily except S, 8-1. Room 1. Professor BRIGGS and Mr. CONGDON. Open only to those who have taken or are taking course S 405 B or its equivalent. The course is a continuation of Part A. The following topics are considered: dissociation; solubility, reactions; reaction velocity and catalysis; indicators; thermochemistry; diffusion; colloids and adsorption; phase rule studies of inversion points; solid-liquid, liquid-liquid, compounds.

S 465. Laboratory Practice in Physical Chemistry. Credit one to three hours. Laboratory periods to be arranged. Professor BRIGGS and Mr. CONGDON.

This course is designed to afford opportunity for special laboratory practice in physical chemistry, colloid chemistry, or electrochemistry.

S 505. Introductory Chemical Spectroscopy. Lectures and laboratory practice. Credit three hours. Lectures, daily except Sat., Room 302. Laboratory practice at hours to be arranged. Room 396. Professor PAPISH and Mr. SHERK.

The construction and use in chemical analysis of the spectroscope, polariscope, refractometer, colorimeter, and nephelometer. The laboratory instruction is devoted to training in the use of these instruments in the solving of chemical problems.

S 515. Spectroscopy in Determinative Mineralogy. Credit two hours. Lectures, daily except Sat., at hours to be arranged. *Room* 302. Laboratory practice at hours to be arranged. *Room* 396. Professor PAPISH and Mr. SHERK.

Application of spectroscopic methods to the identification of major constituents of minerals.

S 520. Spectrographic Methods. Credit one or more hours. Laboratory practice at hours to be arranged. Prerequisite course S 505. *Room* 396. Professor PAPISH and Mr. SHERK.

Application of photographic methods to arc, spark, and absorption spectroscopy as aids in chemical analysis.

Students not desiring University credit may arrange to cover different branches of chemical spectroscopy to suit their special needs.

S 530. Introductory Chemical Microscopy. Lectures and laboratory practice. Credit three hours. Lectures, M W F, 10. *Room* 377. Laboratory, M W F, 11-1, T Th, 10-1; optional, M W, 1:40-4. *Room* 378. Assistant Professor MASON and Mr. FORGENG.

Microscopes and their accessories, as applied to problems in chemistry and technology. Micrometry; quantitative analytical methods: optical properties of crystals and other doubly refractive materials; physico-chemical studies; illumination, photomicrography, and ultramicroscopy; recognition of textile and paper fibers.

S 535. Advanced Chemical Microscopy. Laboratory practice. Credit two or three hours. Prerequisite course S 530. Laboratory periods and conference hours to be arranged. *Room* 378. Assistant Professor MASON and Mr. FORGENG.

Practice in the examination and analysis of inorganic substances containing the more common elements, with special reference to rapid qualitative methods and to the analysis of minute amounts of material.

Students not desiring University credit, who wish to secure a working knowledge of Chemical Microscopy in the shortest possible time, may arrange with the instructor to cover the parts of both of the above courses which best meet their needs.

S 195, S 295, S 395, S 495, S 595. Research. Credit one to six hours. Senior chemists, and others by special permission, may elect research in the fields of Inorganic, Analytical, Organic, or Physical Chemistry, or Chemical Spectroscopy, or Chemical Microscopy, under the direction of some members of the staff of instruction.

DESIGN

S 111, S 112, S 113. Architectural Design. Credit variable according to the amount and the quality of the work done. *While.* Professor BURNHAM.

A continuation of courses in sophomore, junior, and senior design in the College of Architecture. Two major problems and six one-day problems. Registration is limited to students properly qualified. Consult the instructor.

DRAWING: PAINTING: HISTORY OF ART

S 1. Elementary Drawing. Credit two hours. Daily except Sat., 2-4. *Franklin.* Mr. WASHBURN.

This course for beginners in drawing embraces freehand perspective, drawing of geometrical objects and simple casts. The course will begin with pencil work and continue with light and shade in charcoal.

S 2. Elementary Color. Credit two hours. Daily except Sat., 8-10. *Franklin.* Assistant Professor STONE.

Instruction for beginners in color. Students work in pastel from simple groups of objects. Talks will be given on the theory of color.

S 4. Antique. Credit two hours. Daily except Sat., 2-4. *Franklin.* Mr. WASHBURN.

Prerequisite for this course is a knowledge of the elements of drawing. Instruction will be given in charcoal from casts.

S 5. Advanced Color. Credit two hours. Daily except Sat., 8-10. *Franklin.* Assistant Professor STONE.

As in elements of color, students in advanced color work from groups (vases, fruit, flowers) in oil or in water color. Those who have not had elements of color may enter this course on submission of examples of original work. Copies of others' work will not be sufficient for entrance.

S 6. Outdoor Sketching in Color. Credit two hours. Daily except Sat., 2-4. *Franklin.* Assistant Professor STONE.

A knowledge of the elements of drawing and the elements of color is a prerequisite to this course. Instruction is given in oil from landscape.

The unusual variety and charm of the natural environment of Cornell give an abundance of subject-matter from which to work. There are woodland, open farming country, lakes and streams, broad panoramic views, and rugged gorges within easy walking distance of the campus. The student is therefore inspired by surroundings of unique beauty.

S 7. Drawing from the Human Figure. Daily except Sat., 10-12. *Franklin.* Mr. WASHBURN.

Study from living model in charcoal. Courses S 1 and S 4 or their equivalent are prerequisite to this course. A studio fee of ten dollars is charged.

NOTE. All materials needed in any of these courses may be obtained in Ithaca.

S 15. History of Ancient Art. Credit two hours. Daily except Sat., 10. *White 33.* Professor STITES.

A general survey with emphasis on Greek sculpture.

S 17. History of Florentine Painting. Credit two hours. Daily except Sat., 11. *White 33.* Professor STITES.

A survey of the development of Florentine painting from the fourteenth to the sixteenth century.

ECONOMICS AND SOCIOLOGY

The following courses are designed to meet the needs of three classes of students in the Summer Session: (1) those desiring regular college credit for general economics; (2) students with special interests in economic subjects; (3) students seeking broad preparation for the teaching of economics in the secondary schools. For the first group, Course S 1 covers the subject matter usually included under elementary economics. For Cornell students, Course S 1 satisfies the economics requirement in the College of Engineering and will also serve in lieu of Course 1 as a prerequisite for admission to various advanced courses in economics. Graduate students wishing to pursue special investigations will be afforded assistance by other members of the Department of Economics who may be in residence in Ithaca during the summer.

S 1. Modern Economic Society. Credit four hours. Twice daily except Sat., 11 and 12. *GS 142.* Assistant Professor O'LEARY.

A survey of the existing economic order, its more salient and basic characteristics and its operation.

S 5. Current Economic Problems. Credit two hours. Daily except Sat., 8. *GS 264.* Assistant Professor JOHNSON.

A course designed to afford students who have taken an introductory course in Economics the opportunity to become acquainted in a general way with the more important economic problems of the day—tariff problems, reparations problems, railroad problems, trust problems, problems of the farmer, conservation problems, and problems of taxation and public finance.

S 11. Money and Banking. Credit two hours. Daily except Sat., 9. *GS 264.* Professor HOMAN.

A study of the history and the theory of money and banking.

S 33. Public Utilities. Credit two hours. Daily except Sat., 11. *GS 264.* Professor HOMAN.

A study of the economic situation of the public service industries and of problems relating to their organization and control.

S 50a. Introduction to Sociology. Credit two hours. Daily except Sat., 9. *GS 142.* Dr. TANNENBAUM.

This course is designed to orient the student in the social sciences and to develop a sociological frame of reference. It includes a study of the origin, evolution, structure, and activities of society; processes of social interaction; collective behavior; and problems of social control.

S 59. Criminology. Credit two hours. Daily except Sat., 11. *GS. 177* Dr. TANNENBAUM.

This course will attempt to describe the causes, character, extent, and organization of crime in the United States and will undertake to describe and evaluate the agencies engaged in preventing, controlling, and re-directing criminal behavior.

S 83b. The Development of Economic Institutions. Credit two hours. Daily except Sat., 10. *GS 264.* Assistant Professor JOHNSON.

A study of the evolution of economic institutions since the industrial revolution and an examination of the intellectual movements which helped to develop these institutions.

EDUCATION

All courses in Education are described under the Graduate School of Education pages 50-59.

ENGINEERING

The courses in engineering described below are equal in character to corresponding courses given in the College of Engineering during the regular session. They will be accepted for credit towards graduation by the several schools of the college so far as they apply to the prescribed work of the school concerned. Students in the College of Engineering who may desire to offer work done in the Summer Session toward graduation should consult the Director of the school in which they are regularly registered before registering in the Summer Session. Others may obtain information concerning these courses by applying to the Secretary of the College of Engineering.

Additional courses in Structural Engineering and in Hydraulics may be arranged to meet the needs of graduate students.

DESCRIPTIVE GEOMETRY

S 10. Descriptive Geometry. Recitations and drawing, daily except Sat., 9-12, and 2-5. *Lincoln.* Assistant Professor POND.

A study of the representation of lines, planes, surfaces, and solids, and their interrelations. Warped surfaces, tangencies, intersections, and perspective. The work is the same as that given in the regular C. E. courses 205 and 206; and the student will receive four hours of credit if he takes the whole course.

KINEMATICS

Since no two-hour recitation course in Kinematics is given, it will be necessary for any student desiring to obtain credit for course 312 to take the three-hour course 314.

S 313. Kinematic Drawing. Credit one hour. This course is the equivalent of 313 and must be taken with course S 314. Prerequisite courses Physics 11 and 12, 330, 310 or 311, and 120. Drawing board application of the theory and principles of course S 314 in the construction of cams and gears, the solution of linkage and instant center problems, and the determination of velocity and acceleration graphs, etc. Any three of the following three-hour drawing periods: T Th, 10-1, M T W Th F, 1:40-4. *East Sibley 103.* Professor ROGERS.

S 314. Kinematics. Credit three hours. This course is the equivalent of 314 and must be taken with course S 313 or S 315. Prerequisite courses Physics 11 and 12, 330, 310 or 311, and 120. Eight recitations a week on the theory of mechanism, instant centers, cams, gears, linkages, velocity and acceleration diagrams. Daily except Sat., 9, and M W F, 12. *East Sibley 108.* Professor ROGERS.

S 315. Kinematic Drawing. Credit two hours. This course is the equivalent of 315 and must be taken with course S 314. Prerequisite courses Physics 11 and 12, 330, 310 or 311, and 120. Drawing board application of the theory and principles of course S 314 in the construction of cams and gears, the solution of linkage and instant center problems, and the determination of velocity and acceleration graphs, etc. Any five of the following three-hour drawing periods: T Th, 10-1, M T W Th F, 1:40-4. *East Sibley 103.* Professor ROGERS.

NOTE. This announcement of courses in Kinematics is tentative only; no course will be given unless a sufficient number of students apply.

MECHANICS OF ENGINEERING

The following courses in Mechanics of Engineering are open to students from other universities, subject to the same requirements for admission as are made for Cornell students. See the Announcement of the College of Engineering for more detailed description of Courses 220, 221, 223, 330, and 331. Professor RETTGER and Assistant Professors PERKINS and WOOD. Office, *Lincoln 33C.*

S 220. Mechanics. Credit six hours. Equivalent to C. E. 220. Recitations, daily, 9 and 12; and three computing periods a week.

S 221. Mechanics. Mechanics of Materials. One section. Credit four hours. Equivalent to C. E. 221. Prerequisite course 220 or the equivalent. Recitations, daily except Sat., 8 and 11; and one computing period a week. See S 221 A.

S 221 A. Mechanics Laboratory. Equivalent to C. E. 221 A. Credit one hour. Must be taken with S 221. Hours to be arranged.

S 223. Engineering Problems. Credit two hours. Equivalent to C. E. 223. Five computing periods a week. Will be given only if enough students register for the course.

S 330 A. Mechanics. Credit five hours. One section. Twelve recitations a week and one computing period. Equivalent to M. E. 330 A. Recitations, daily, 9 and 12. Computing period to be arranged.

S 331 A. Mechanics of Materials. Credit four hours. One section. Eleven recitations and one computing period a week. Equivalent to M. E. 331 A. Prerequisite course 220 or 330, or the equivalent. Recitations, daily, 8 and 10.

MATERIALS OF CONSTRUCTION

S 225. Materials of Construction. Credit three hours. The materials studied are: lime, cement, stone, brick, sand, timber, ores, cast iron, wrought iron, steel, and some of the minor metals and alloys. The chemical and physical properties, uses, methods of manufacture, methods of testing, and unit stresses of each material are considered, particular emphasis being laid on the points of importance to engineers. 9. Professor SCOFIELD.

S 226. Materials Laboratory. Credit three hours. Prerequisite course S 221; and should preferably be taken with or preceded by 280. Experimental determinations of the properties of materials by mechanical tests. Study of testing machines (their theory, construction, and manipulation); calibration of testing machines and apparatus; commercial tests of iron and steel; tensile, compressive, torsional, shearing, and flexure tests of metal and various woods with stress-strain observations; tests of cement, concrete aggregate, concrete plain and reinforced, and of road material and paving brick. The course is planned to supplement course S 225 with its study of the properties of materials by the actual handling of the materials and by observations of their behavior under stress. Laboratory work, 10:30-12:50. Professor SCOFIELD.

HYDRAULICS

S 240. Hydraulics. Credit four hours. Prerequisite courses 220, 221, or 330, 331. Five recitations and three computing periods a week. Ten demonstration lectures are given in periods to be arranged. Daily except Sat., 10; M W F, 1:40-4.

The Schools of Mechanical and Electrical Engineering will accept this course for 334 or 335. Professor SCHODER.

Text: Schoder and Dawson, *Hydraulics*.

Hydrostatics, including stability of gravity dams, immersion and flotation, gas volumes and pressure; flows of liquid through orifices, nozzles, Venturi meters, pipes, and over weirs; time required to fill and empty tanks and canal locks; simple, compound, branching, and looping pipes; elementary power calculations in common pumping and fire protection problems. Flow of water in open channels. Elementary consideration of modern water wheels.

STRUCTURAL ENGINEERING

S 270. Structural Design and Bridge Stresses. Credit four hours. Lectures and recitations, daily except Sat., 8; computations and drawings at hours to be assigned. *Lincoln* 14 and 29. Prerequisite C.E. 220, 221. Assistant Professor BURROWS.

One-fourth of the course includes structural details, i. e., the design of a wooden roof truss and other timber joints. The remainder of the course includes dead load, live load, and impact stresses in simple bridge trusses due to uniform live panel loads, locomotive axle loads, and highway loads. Text: Urquhart and O'Rourke, *Stresses in Simple Structures*.

S 271. Structural Design. Credit three hours. Lectures, computations, and drawing. Daily, 10:30-12:50. *Lincoln* 14. Prerequisite C.E. 270. Assistant Professor BURROWS.

An elementary course in steel design. Complete design, detail drawing, bill of material, and estimate of weight of a steel roof truss, a through and a deck-plate, girder bridge. Text: Urquhart and O'Rourke, *Design of Steel Structures*.

S 274. Bridge Design. Credit three hours. Computation and drawing, daily, 10:30-12:50. Prerequisite C.E. 271. Assistant Professor BURROWS.

Computations and drawing for the complete design of a riveted railroad or highway bridge. The computations to determine the sections of all members, joints, splices, and other details are to be written up in systematically arranged reports. The drawing consists of general plans showing the location of all rivets as well as the composition and relation of all members and connections. The final reports are to give a full list of shapes and plates, and a classified analysis of weight for the span.

S 280. Concrete Construction. Credit three hours. Daily, 9-10:30. Prerequisite courses C.E. 220, 221, (see announcement of S 226). Professor URQUHART.

Concrete materials, properties of plain concrete, its making and deposition; elementary theory of reinforced concrete as applied to columns, rectangular beams, and slabs; T-beams reinforced for compression; direct stress combined with flexure. Text: Urquhart and O'Rourke, *Design of Concrete Structures*.

S 281. Foundations. Credit three hours. Daily except Sat., 8. Prerequisite courses 220 and 221. Piles and pile driving, including timber, concrete, tubular, and sheet piles; cofferdams; box and open caissons; pneumatic caissons for bridges and buildings, caisson sinking, and physiological effects of compressed air; pier foundations in open wells; freezing process; hydraulic caissons; ordinary bridge piers; cylinders and pivot piers; bridge abutments; spread footings for building foundations; underpinning buildings; subterranean explorations; unit loads. Text: Jacoby and Davis, *Foundations of Bridges and Buildings*. Recitations, collateral reading in engineering periodicals, and illustrated reports. Professor URQUHART.

S 285. Reinforced Concrete Design. Credit three hours. Daily except Sat., 10:30-12:50. Prerequisite course 280. Professor URQUHART.

Theory and design of gravity, cantilever, and counterfort retaining walls. Design of multiple column footings of reinforced concrete. I-beam grillages. Design of bins and tanks; subsurface and supported on towers. Reports and sketches.

ENGLISH

Courses S 1 and S 2 taken together will be considered the equivalent of either the first term or the second term of Course 1 or of Course 3 in the regular University session, but not of both.

S 1. Composition. Credit two hours. Daily except Sat., 8. *GS 124.* Mr. BALDWIN.

A study of the elementary principles of composition, intended to teach the habit of clear and correct expression; reading of models, frequent writing of themes, class discussions; personal conferences at hours to be appointed.

S 2. Introductory Course in Literature. Credit two hours. Daily except Sat., 9. *GS 124.* Mr. BALDWIN.

A study of selections from Shakespeare, Milton, and writers of lyric poetry, intended to acquaint the student with works of the masters of English literature.

S 4. Advanced Composition. Credit two hours. Daily except Sat., 10. *GS 164.* Dr. MARX.

The planning, writing, and criticism of essays and of other exercises in composition, accompanied by a study of general principles of writing and of questions of English usage. Open only to teachers and to students who have had one year of college English.

S 5. Teachers' Course. Credit two hours. Daily except Sat., 10. *GS 156.* Professor NORTHUP.

Lectures, readings, reports, and discussions. Designed for those who are teaching or who expect to teach English in schools. The organization of the high school course in English; the teaching of literature in general; supplementary reading for pupils and teacher; the use of the school library and the public library; stage productions; the place of language and grammar in the high school; problems of oral and written composition; the relation of composition to literature and to other subjects in the curriculum.

S 6. Nineteenth Century Poetry. Credit two hours. Daily except Sat., 12. *GS 156.* Associate Professor HALE.

A study of the poetry of Wordsworth and Coleridge, and of their relations to the revolutionary movement and to the new birth of English poetry. Texts: Oxford editions of these poets.

S 7. Nineteenth Century Poetry. Credit two hours. Daily except Sat., 9. *GS 156.* Associate Professor HALE.

A study and discussion of the most important poems of Byron, Shelley, and Keats. Texts: Oxford editions of these poets.

S 8. Modern American Poetry. Credit two hours. Daily except Sat., 10. *GS 160.* Professor THOMPSON.

The leading poets from Emily Dickinson to the present. Text: Untermeyer, *Modern American Poetry*.

S 9. Prose of the Nineteenth Century. Credit two hours. Daily except Sat., 9. *GS 162.* Professor MONROE.

English prose, chiefly as illustrated by the essayists and reviewers. Macaulay, DeQuincey, Jeffrey, Hazlitt, Lamb. Readings, recitations, and reports.

S 11. American Literature to the Civil War. Credit two hours. Daily except Sat., 8. *GS 150.* Professor THOMPSON.

A study of literary, social, and political ideals of America as reflected in the writings of Irving, Bryant, Cooper, Poe, Emerson, Thoreau, Hawthorne, Melville, Longfellow, Whittier, Holmes, and Lowell. Text: Quinn, Baugh, and Howe, *The Literature of America*, vol. i.

S 12. Victorian Literature. Credit two hours. Daily except Sat., 12. *GS 162.* Dr. MARX.

A study of some typical Victorian prose and poetry, including essays of Arnold and poems of Tennyson and Browning.

S 17. Modern Drama. Credit two hours. Daily except Sat., 10. *GS A*. Professor STRUNK.

A study of plays of Ibsen and of contemporary dramatists. Texts: Ibsen, *Plays*, in the Modern Readers' Series; Tucker, *Chief Continental Dramatists*; Watson and Pressey, *English and Irish Plays*, vol. ii.

Open only to upperclassmen and to graduates.

S 18. Old English. Credit two hours. Daily except Sat., 11. *GS 162*. Professor MONROE.

This course is intended for students who, lacking the opportunity hitherto, now wish by earnest effort to acquire some knowledge of English in its early form. Lessons in grammar are followed as soon as possible by the reading of easy prose of the time of Alfred the Great.

The course may be taken by undergraduates; and, with additional reading, by graduates as a part of their work for the master's degree.

S 20. Shakespeare. Credit two hours. Daily except Sat., 11. *GS 156*. Assistant Professor NUNGEZER.

A study of the dramatic art of Shakespeare as illustrated by *Hamlet*, *Macbeth*, *King Lear*, and *Antony and Cleopatra*. Designed especially for teachers of Shakespeare. Supplementary reading for those who wish a general knowledge of the Shakespearean age.

S 50. Phonetics of English, French, Spanish, German, Latin. See Latin, course S 50.

COURSES EXCLUSIVELY FOR GRADUATES

S 30. English Literature. For graduates only. M W Th, 2-3:30. *GS 183*. Professor NORTHUP.

Designed especially as an introduction to the graduate study of literature but open also to students who have already done some graduate work. The special topic for the present session is *Theories of Poetry*.

S 31. Dramatic Literature. Daily except Sat., 11. *GS 160*. Professor STRUNK.

A study of the general principles of the drama, with reading of illustrative plays and of Donald Clive Stuart's *Development of Dramatic Art*.

S 32. Seminary in Elizabethan Literature. For graduates only. Hours and room to be arranged. Assistant Professor NUNGEZER.

The content of this course will be determined after consultation with students who register for graduate work in Elizabethan literature.

S 33. Beowulf. For graduates only. Hours to be arranged. Consult instructor. Professor MONROE.

Designed to supplement course S 18. A knowledge of Old English is prerequisite.

GEOGRAPHY AND GEOLOGY

The lecture rooms and laboratories are in *McGraw Hall*. It is the purpose of this department to meet, primarily, the needs of teachers in grammar schools, high schools, normal schools, and colleges. A second aim is to provide courses of practical and cultural value to college students. The work embraces lectures, laboratory, and field instruction in physical, commercial, and regional geography, and in the elements of geology. The environs of Cornell University are rich in phenomena of geographic and geologic interest. Field excursions, consequently, are made an especially important part of the work of this department in the Summer Session. The laboratories are well equipped with apparatus and illustrative material for instruction. The material includes teaching and reference collections of minerals, rocks, fossils, maps, photographs, models, and more than five thousand lantern slides.

Students planning to take work in the department should, if possible, consult the instructor and register for courses on Monday, July 11, at rooms indicated.

LECTURE COURSES IN GEOGRAPHY AND GEOLOGY

S 1. Physical Geography. Credit two hours. Daily except Sat., 9. *Geological Lecture Room, McGraw Hall* (first floor, south end). Professor VON ENGELN.

An introductory course in physical geography, including discussion of the nature and form of the continents; the structure and development of the relief of the land; the physiographic cycle in humid and arid regions; glaciers; the glaciation of North America; the elements of oceanography.

The lectures are illustrated by lantern slides, maps, models, and charts. Students registering in course S 1 are advised to take also the related courses S 8 and S 10.

S 2. Commercial and Industrial Geography. Credit two hours. Daily except Sat., 11. *Geological Lecture Room.* Professor VON ENGELN.

The effect of geographic factors on the production and distribution of commodities. Discussion of the origins and regional background of industry and commerce; the volume, extent, and utilization of important products and resources; location and growth of cities.

S 3. Human Geography. Credit two hours. Daily except Sat., 11. *Physical Geography Lecture Room.* Assistant Professor POOLE.

A study of the interrelations between man and environment. The fundamental principles of geography with illustrative examples taken from all continents with emphasis upon the study of the earth as the home of man and upon his adjustments to his natural surroundings.

The course is designed to meet the needs of both teachers and students and offers (1) a systematic grounding in the subject, (2) a critical view of the relation of man to a varied and varying environment.

Lectures, reference readings, discussions.

S 4. Teachers' Geography. Credit two hours. Daily except Sat., 8. *Physical Geography Laboratory.* Assistant Professor POOLE.

A professionalized subject-matter course on teaching regional Geography from the social point of view. The purpose is to emphasize the essentials of the geography of the regions or countries selected for study; to direct teachers and supervisors to available materials; and to outline and demonstrate methods that will help them to interpret geographic relationships in their classes. Special consideration will be given to the content and problems of the Regents Syllabus for Geography in New York State. Lectures, reference readings, and discussions.

S 5. Geology. Credit two hours. Daily except Sat., 10. *Geological Lecture Room.* Assistant Professor SPOCK.

An introductory course in geology, consisting of lectures and assigned readings upon the following topics: origin of the earth; geologic history of the earth; materials of the earth's crust and their arrangement, as well as the forces modifying them; vulcanism, earthquakes, etc.; development of life on the earth.

The lectures will be illustrated with lantern slides, models, maps, and specimens. Students registering for this course are urged to take the laboratory course S 9 and, if possible, course S 10. Credit for Geology course 100 regular session will be allowed only for successful completion of all three courses S 5, S 9, S 10.

S 7. Historical Geology. Credit two hours. Daily except Sat., 11. *General Geological Laboratory.* Assistant Professor SPOCK.

This course deals with the geologic conditions and the animal and plant life of the various subdivisions of geologic time. The development of the groups of the animal and vegetable kingdoms is traced throughout the geologic periods and studies made of fossils both in the collections and on field trips. This course may be taken alone or with either S 1 or S 5. Students taking it are urged to take S 10, as stratigraphic features are pointed out on all the field trips.

LABORATORY AND EXCURSION COURSES IN BOTH GEOGRAPHY AND GEOLOGY

S 8. **Physical Geography, Laboratory Course.** Credit one hour. T Th, 2-4. *Physical Geography Laboratory.* Miss BAKER.

The members of this class will make a study of the physiographic regions of the United States, using contour maps, models, and the experimental laboratory of the department. By such study topographic, climatic, and biologic conditions (human, animal, and plant) will be correlated. There will be given also exercises on the other physiographic topics generally included in a laboratory study of the subject. The course will prove of worth to teachers of geography in the grades who wish to obtain a broader basis for their work in the subject as well as for those who expect to teach geography or general science in the high schools.

A laboratory fee of \$1 must be paid to the Treasurer at the beginning of the session to cover laboratory maintenance.

S 9. **Geology, Laboratory Course.** Credit one hour. W F, 2-4. *General Geological Laboratory.* Mr. CONANT.

This course is designed to supplement course S 5. A study will be made of the more common structural phenomena; of the interpretation and uses of geological maps; of characteristic life forms developed in different geological periods; and of the more common rocks and minerals. Short field excursions may be taken to collect both rock specimens and fossils.

A laboratory fee of \$1 must be paid to the Treasurer at the beginning of the session to cover laboratory maintenance.

S 10. **Geography and Geology, Field Course.** This course should be elected by all those registering in course S 1 or S 5. With courses S 1 and S 8 it affords a comprehensive course in physical geography; with courses S 5 and S 9 it will give a similarly broad training in elementary geology, as the dynamic phases of geology are emphasized on the excursions. Mimeographed outlines of the excursions are to be secured by each student desiring credit. See also a pamphlet, obtainable in Ithaca, on *The Geography and Geology of the Cornell Region*. Mr. CONANT, Miss BAKER, and other members of the staff.

Those desiring University or entrance credit must take field notes and hand in written reports. Excursions 1, 2, 3, 4, 5, are required of all students in the course, and in addition for one hour's credit they must take any two of the following four all-day excursions: 6, Taughannock; 7, Niagara; 8, Northern Pennsylvania; and 9, Watkins.

Meeting place and time announced in mimeographed outlines or by bulletin. Meet for first excursion, Monday, July 18; at McGraw Hall, 2 P. M. Excursions 1-5, Monday afternoons; 6, 7, 8, 9, all day. On the excursions to which a cost is attached, auto-bus, steamer, or railway trips, persons wishing to go must register at the department and secure tickets in advance of the date of the trip. The total cost of the trips will be from \$7 to \$10, according to the choices made. Announcement regarding field trips are posted on the middle door of *McGraw Hall* and all arrangements for reservations and tickets are made in the Geology Department Office, middle entrance, *McGraw Hall*. The trips are open to others besides the members of the excursion class as far as accommodations are available. Students desiring credit or certificates of attendance must register in S 10 and will be given preference in accommodations.

The longer excursions will be in charge of Mr. CONANT, with the cooperation and assistance of the other members of the instructing staff. On the excursions stops will be made at points of interest, explanations made, questions asked, and discussion invited.

OUTLINE OF EXCURSIONS: COURSE S 10

Monday Afternoons

1. **Bald Hill.** To become acquainted with the lie of the land about Cornell, to learn the place names and nature of the broader physiographic features,

studying enroute processes of weathering, and, at the summit, the maturely dissected plateau. The top of the hill is a vantage point from which a good view of the lake and the land for miles to the north, east, and west may be had. July 18.

2. **Cascadilla Creek.** To study the origin and nature of sedimentary rocks, also processes of erosion, transportation, deposition, and cementation. A study in detail of one of the large gorges and its special features. July 25.

3. **Portland Point.** By auto-bus. To study rock structure; intrusion of igneous rocks into sedimentary formations; rock-folding and small scale faulting and associated phenomena; vein-formation; fossil content of strata; economic utilization for cement; gas wells. August 1.

4. **Enfield Gorge and Falls.** By auto-bus. To study the relations of pre-glacial and hanging valleys and the postglacial and interglacial gorges, their origin and features. Joint-plane guidance of stream courses. A ride to the head of the gorge, climb through it to the lower end past the crest of Lucifer Falls. Enfield is perhaps the most picturesque of the gorges in the Cornell region. August 8.

5. **Terminal Moraine.** North Spencer. By auto-bus. To study a massive morainic loop, the basin in which the former ice tongue rested, and the outwash deposits and overflow channels to the south. Truncated valley sides due to glacial erosion. The most striking examples of glacial phenomena in the Cornell region. August 15.

All-day Excursions

6. **Taughannock Gorge and Falls.** By steamer. To study the Inlet Plain, its reclamation, the Barge Canal terminal, the position and succession of the Devonian strata along the lake shore, and the deep gorge and falls of Taughannock, one of the highest straight falls east of the Rockies. Luncheon at the foot of the falls. July 23.

7. **Niagara Falls and Gorge.** Physiography, especially glacial phenomena, and geology of northwestern New York; physiography and geology of Niagara Falls and Niagara Gorge. By train and trolley. July 31.

8. **Northern Pennsylvania.** Geology of an anthracite mine and the physiography of the Susquehanna valley at Wyalusing Rocks. Stops will be made to study Appalachian structure, folds and faults, and the stratigraphy of a complete section from the Portage beds of the Devonian through the Pottsville conglomerate of the Pennsylvanian. An exceptionally fine scenic trip by auto-bus over the Roosevelt Highway through southern New York and northern Pennsylvania. August 6.

9. **Watkins Glen.** By auto-bus. Watkins Glen is one of the most beautiful scenic spots in the country. The excursion party will study the gorge, its pot holes, and its falls in detail; and consider its relation to the Seneca Lake valley in comparison with the conditions at Ithaca in relation to the Cayuga valley. Luncheon at the head of the gorge. August 13.

FIELD COURSE

S 21. Summer Field School in Geology. Intended for students who desire to study geology in the field. The camp is located in central Pennsylvania near Tyrone and instruction covers a period of six weeks, from June 19 to July 30. Six units of college credit are given upon successful completion of the course. Fixed expenses, including the regular tuition fee of \$60.00, are approximately \$150.00. Registration is limited to men. Assistant Professor NEVIN.

The region selected is especially suitable for field work in geology. Sedimentary rocks from Cambrian to the Coal Measures are represented, with a total thickness of some 27,000 feet. Folds and faults are extensively developed, and their

effect on the topography is very marked. Instruction includes both reconnaissance and detailed mapping. The course, open to students with either elementary or advanced training in geology, will be conducted to meet the individual needs of the student. A special circular containing detailed information will be furnished upon request.

GERMAN

S 1. First Year German. Grammar, composition, reading, oral training. Daily except Sat., 8 and 12. *GS* 183. Professor ANDREWS. Credit four hours. Entrance credit, one unit.

After successfully completing this course, students can, by supplementary reading during the summer, prepare themselves for the College Board entrance examination in second year German.

S 3. Third Year German. Reading, grammar, composition, oral training. Daily except Sat., 8 and 12. *GS* 190. Dr. HIEBLE. Credit four hours. Entrance credit, one unit (third unit).

Prerequisite: two years of high school German or the equivalent.

S 4. Composition and Conversation. Credit two hours. Daily except Sat., 10. *GS* 177. Dr. HIEBLE.

Exercises conducted in German. Prerequisite course S 3 or its equivalent.

S 5. Rapid Reading. Credit two hours. Daily except Sat., 9. *GS* 183. Professor ANDREWS.

German texts of literary value will be read and translated, with casual comment upon their literary significance.

Prerequisite: three years of high school German or the equivalent.

S 10. Contemporary German Literature. Credit two hours. Daily except Sat., 11. *GS* 190. Professor FAUST.

Lectures in German on German literature, 1880-1930. Foreign influences; naturalism, impressionism, expressionism. Collateral reading.

S 12. Teachers' Course in Methods. Credit two hours. Daily except Sat., 9. *GS* 181. Professor FAUST.

Examination of various methods of teaching modern languages. Critical study of the Coleman Report. Textbooks for college and preparatory school. Suggestions for teachers' examinations in German.

S 50. Phonetics of English, French, Spanish, German, Latin. See Latin, course S 50.

German Lectures. Lectures or interpretative readings in German will be given by members of the department on Wednesday evenings at 8 o'clock in *GS* 190.

German Conversation. A special table for conversation in German will be reserved in Prudence Risley Hall in case a sufficient number of applications are received by the Department of German, Goldwin Smith Hall 181, before July 1.

GOVERNMENT

S 6. Political Parties and Popular Government. Credit two hours. Daily except Sat., 9. *GS* 245. Professor CUSHMAN.

The nature, development, organization, and methods of political parties; nominations, campaign methods, elections; public opinion as a factor in popular government; initiative, referendum, and recall.

S 28. American Constitutional Government. Credit two hours. Daily except Sat., 11. *GS* 245. Professor CUSHMAN.

A survey of the development of the Federal Constitution. Lectures, readings, a study of Supreme Court decisions, class discussions. Open to those who have had a general course in American Government.

HEALTH EDUCATION

See under Physical and Health Education, page 41.

HISTORY

S 1. Imperial Rome (B. C. 30 to A. D. 337). Credit two hours. Daily except Sat., 9. GS 234. Professor LAISTNER.

This course will (1) trace the political and administrative history of the Roman Empire to the death of Constantine; (2), offer a general survey of its economic and cultural life.

S 2. Seminary in Ancient History. Credit two hours. Daily except Sat., 10. GS 234. Professor LAISTNER.

Primarily for students preparing for the M.A. degree. Selected topics of Greek or Roman History will be treated, to meet, as far as possible, the needs of individual students. Consult the instructor before registering.

S 5. Modern European History. Credit two hours. Daily except Sat., 10. GS 242. Associate Professor GERSHOY.

A general survey of the history of Europe from 1815 to 1914.

S 6. The French Revolution. Credit two hours. Daily except Sat., 11. GS 242. Associate Professor GERSHOY.

A study of the period from 1789 to 1795 with a sketch of conditions before the Revolution.

S 7. English History. Credit two hours. Daily except Sat., 8. GS 242. Professor MARCHAM.

A survey of English, political, economic, and social life from the earliest times to the present. Primarily for sophomores and juniors.

S 8. Tudor and Early Stuart England. Credit two hours. Daily except Sat., 9. GS 242. Professor MARCHAM.

Politics, the Reformation and Renaissance, the economic revolution. Readings in contemporary literature. Primarily for seniors and graduates.

S 10. The United States Since 1876. Credit two hours. Daily except Sat., 9. GS 200. Professor WHITAKER.

Political and social history of the United States from Hayes to Hoover. Lectures, readings, discussions. For undergraduates.

S 11. The Old South. Credit two hours. Daily except Sat., 11. GS 234. Professor WHITAKER.

A survey of the development of the South from the settlement of Virginia to the Civil War. Lectures and studies of source problems. For upperclassmen and graduates.

S 12. American History, the Middle Period, 1815-1850. Credit two hours. Daily except Sat., 8. GS 234. Professor BRETZ.

A survey of the period with special reference to political theory, the development of nationality, territorial expansion, and the crisis of 1849-1850. The course is intended for undergraduates.

S 13. Seminary in American History. Credit two hours. Daily except Sat., 10. GS 235. Professor BRETZ.

Chiefly for students who are preparing theses for the M.A. degree. Consult the instructor before registering.

S 17. Contemporary History and its teaching in the secondary schools. Credit two hours. Daily except Sat., 10. GS 120. Mr. KIDGER.

The history of Europe since the war: the Peace Treaty; the conference of the premiers and of the ambassadors; the League of Nations; England; France; Italy; Germany; Austria; Hungary; Czechoslovakia; Yugoslavia; and Poland. Both in method and in content the course will be useful to teachers in secondary

schools especially such as teach the courses in world history prescribed by the new syllabus of the University of the State of New York.

S 30. **Teachers' Course in Social Studies.** See Education, page 53.

LATIN

The object of the Summer Session courses in Latin is twofold:

(a) to provide a series of courses, theoretical and practical, dealing with the professional training and equipment of the high-school Latin teacher who desires a thorough comprehension of the aims and of the technique of the recent developments in classical teaching in the secondary schools;

(b) to offer advanced courses, with direction of graduate work for those who are qualified to enter the Graduate School or to continue their work as candidates for the degree of Master of Arts with Latin as a major or a minor subject.

S 1. Cicero's Orations and Third-Year Latin. Cicero's classification of orations and his analysis and descriptions of oratorical style. Study of typical examples from Cicero's orations.

The course is intended to establish a clearer and more coherent concept of the proper treatment of Cicero's oratorical works in the high-school curriculum.

A careful study of the program for the third year of Latin: selections from the simple style; discussion of the methods and details of rhetorical embellishment and elaboration; examples of Cicero's more ornate literary style.

For high school teachers and graduate students. Credit two hours. Daily except Sat., 10. GS 128. Professor DURHAM.

S 2. Selections from Lucretius, De Rerum Natura, and Cicero's Philosophical Works. A study of the chief types of philosophical thought during the Roman republic. Primarily for graduate students. Credit two hours. Daily except Sat., 11. GS 120. Professor SMITH.

S 3. Virgil's Aeneid, with particular reference to books vii-xii. Primarily for teachers and graduate students. Credit two hours. Daily except Sat., 12. GS 120. Professor SMITH.

S 4. History of the Latin Language. Sounds, Flexions, and Word Formation. Primarily for graduate students. Credit two hours. Daily except Sat., 9. GS 128. Professor DURHAM.

S 5. Theses and Informal Study. Direction will be offered in the preparation and completion of theses by students who are candidates for the master's degree, and opportunities will be afforded for informal study in fields not listed in the series of courses given above.

NOTE: Those who wish to begin their candidacy for the degree of Master of Arts are invited to correspond in advance with Professor Durham, and are requested to bring with them at the opening of the Summer Session such credentials of undergraduate work leading to the degree A.B. as will entitle them to admission to the Graduate School.

S 50. Phonetics of English, French, Spanish, German, Latin. A course presented by representatives of these departments, primarily for high-school teachers and for those who are interested in correct vernacular pronunciation. Prerequisite a working knowledge of at least one foreign language. Credit one hour. M W F, 2. *Goldwin Smith* 128. Professors DALE and DURHAM, Mr. HIEBLE, Professors MASON and MONROE.

MATHEMATICS

Each teacher will have a daily office hour for consultation with students. It is urged that this opportunity be utilized by all concerned.

In the following list, courses S 1 to S 5b are the equivalent of courses having the same numbers in the *Announcement of the College of Arts and Sciences* for 1931-32.

Courses S 1, S 2, S 3, are planned for those teachers in the secondary schools who wish to review these subjects. They are equivalent to the advanced entrance requirements of Cornell University and of the College Entrance Examination Board. They presuppose a ready knowledge of elementary and intermediate algebra and of plane geometry. University credit for S 1, S 2, S 3, three hours each.

Students taking S 5a or S 5b are requested to take no other University work during the session without special permission. University credit for S 5a, S 5b, five hours each.

S 1. **Solid Geometry.** Daily, 10. *White 1.* Professor GILLESPIE. (Office hour, 9, *White 3.*) *White 28.* Mr. HADLOCK. (Office hour, 9, *White 29.*)

S 2. **Advanced Algebra.** Daily, 9. *White 25.* Professor HUTCHINSON. (Office hour, 10, *White 26.*) *White 6.* Professor HURWITZ. (Office hour, 10, *White 8.*)

S 3. **Trigonometry.** Daily, 8. *White 10.* Professor CARVER. (Office hour, 9, *White 12.*) *White 6.* Dr. DYE. (Office hour, 9, *White 8.*)

S 5a. **Analytic Geometry and the Calculus** (First term's work). Daily 8 and 11. *White 5.* Assistant Professor CRAIG. (Office hour, 9, *White 4.*)

S 5b. **Analytic Geometry and the Calculus** (Second term's work). Daily, 8 and 11. *White B2.* Mr. HORSFALL. (Office hour, 9, *White B4.*) *White 27.* Dr. PARADISO. (Office hour, 9, *White 29.*) *White 21.* Mr. SPENCER. (Office hour, 9, *White 26.*)

S 20. **Teachers' Course.** Credit two hours. Daily except Sat., 8. *White 24.* Professor SNYDER. (Office hour, 10, *White 26.*)

The course will comprise selected topics in the subjects of secondary school mathematics, including constructions by ruler and compass and the solution of equations. The mutual dependence of algebra and geometry in the solution of problems will be emphasized.

ADVANCED COURSES

S 21. **Theory of Numbers.** Credit three hours. Daily, 10. *White 10.* Professor CARVER. (Office hour, 9, *White 12.*)

An elementary course treating linear and quadratic congruences in the rational realm.

S 42. **Advanced Calculus.** Credit three hours. Daily, 11. *White 6.* Professor HURWITZ. (Office hour, 10, *White 8.*)

A study of the processes of the calculus; definitions and properties of limits, continuity, derivatives, and integrals.

S 45. **Functions of a Complex Variable.** Credit three hours. Daily, 8. *White 1.* Professor GILLESPIE. (Office hour, 9, *White 3.*) Prerequisite Mathematics 4b or the equivalent.

An introductory course on single-valued analytic functions.

S 61. **Projective Geometry.** Credit three hours. Daily, 9. *White 28.* Professor SHARPE. (Office hour, 10, *White 29.*)

The principles underlying projective forms of the first and second degrees will be discussed. Although no knowledge of mathematics beyond plane geometry will be presupposed, additional training is highly desirable.

S 63. **Algebraic Plane Curves.** Credit three hours. Daily, 9. *White 24.* Professor SNYDER. (Office hour, 10, *White 26.*) Prerequisite Mathematics 4b or the equivalent and a knowledge of projective geometry equivalent to Mathematics S 61.

A study of the properties of cubic and quartic curves.

READING AND RESEARCH COURSES

In addition to the preceding courses, opportunities are offered to graduate students to participate in informal work by reading and research under the direction of members of the Department of Mathematics. A regularly registered student may, by arrangement, obtain academic credit for any of this work; the number of hours of credit will depend on the amount of work done. Students interested in such directed reading or research may consult any of the following: Professors HUTCHINSON, SNYDER, SHARPE, HURWITZ, CARVER, GILLESPIE, Assistant Professor CRAIG.

S 100. Topics in Algebra.

S 100. Topics in Analysis.

S 100. Topics in Geometry.

S 100. Topics in Applied Mathematics.

MUSIC

S 5 A. **Art of Music.** Credit two hours. Daily except Sat., 9. *Music Building, 320 Wait Avenue.* Professor WEAVER.

The fundamental acoustic, psychological, theoretical, aesthetic, and historical factors which enter into a rational understanding and enjoyment of the art.

S 10 B. **History of Music.** Credit two hours. Daily except Sat., 11. *Music Building, 320 Wait Avenue.* Professor WEAVER.

A survey of the evolution of the art of music, with particular reference to questions of style and to the place of music in the artistic and social life of nations. This part of the course covers the period from approximately 1700 to the present day.

S 12 B. **History of Pianoforte Literature.** Credit two hours. Daily except Sat., 10. *Music Building, 320 Wait Avenue.* Assistant Professor HAIGH.

An illustrated course giving a survey of pianoforte literature from the Beethoven period to the present day. Although intended primarily for students who play the piano, technical proficiency on the instrument is not required as a prerequisite.

S 20 A. **Harmony.** Credit two hours. Daily except Sat., 8. *Music Building, 320 Wait Avenue.* Assistant Professor HAIGH.

A course dealing with the construction and interconnection of triads and chords of the seventh.

S 50. **Music in the Grade School.** Credit two hours. Daily except Sat., 12. Mr. SPENCER.

An introduction to the general problem of school music; its values as an educational subject; principles underlying classroom methods; examination of materials and practical suggestions for teachers of grades 1 to 8.

S 52. **Music in the High School.** Credit two hours. Daily except Sat., 2. *Music Building, 320 Wait Avenue.* Mr. SPENCER.

A study of the needs and problems of the High School with reference to the place of music in that school and to the types of musical instruction suitable to and desirable in that school; evaluation of methods and materials and practical suggestions for teachers.

S 60. **Applied Music.** Individual instruction in piano and organ. Credit two hours for students majoring in music; for other students, no credit.

Hours to be arranged. Assistant Professor HAIGH and Mr. ANDREWS.

This course is offered primarily for students wishing to major in music; and in such cases the work of the course is definitely correlated with the theoretical courses being pursued by the student. Whenever the facilities of the department permit, other students are allowed to register for this course without credit. Permission to register for this course, whether with or without credit, should be obtained from Professor Weaver.

Individual instruction in organ is offered under Mr. Andrews, and in piano under Professor Haigh. Facilities for practice are available in each case. Students should consult the instructor at the beginning of the term as to hours of instruction, and the secretary of the department as to hours of practice.

Special fees are charged for this instruction and for the use of practice facilities; information may be obtained from the secretary of the department.

S 61. Applied Music. A continuation of course S 60, open to students who have completed that course or its equivalent. See S 60 for conditions and regulations applying also to S 61.

Chorus. The Department of Music will organize and maintain a choir for the services in Sage Chapel at 11 o'clock each Sunday morning during the Summer Session. Applications for admission to this choir will be received by Mr. ANDREWS, Acting University Organist, in Sage Chapel on Wednesday, July 13, from 3:30 to 5 o'clock, or on Thursday, July 14, from 4 to 5 o'clock. The rehearsals will be held on Thursdays at 5 o'clock and on Sundays at 10 o'clock, in the choir-loft in Sage Chapel.

PHILOSOPHY

S 1. Logic. Credit two hours. Daily except Sat., 9. *GS 227.* Professor SABINE.

The general character of the thinking process, its laws of development and methods of solving problems.

S 2. Ethics. Credit two hours. Daily except Sat., 11. *GS 227.* Professor MORROW.

After a short study of the development of moral attitudes and beliefs, this course will offer a critical formulation of ethical principles and standards, with a discussion of the method of ethical thinking as applied to a few typical problems of social morality.

S 3. Political and Social Ethics. Credit two hours. Daily except Sat., 10. *GS 227.* Professor MORROW.

The philosophical basis of law and rights; political and social ideals.

S 4. History of Modern Philosophy. Credit two hours. Daily except Sat., 11. *GS 225.* Professor SABINE.

The main currents of modern philosophy with special reference to Descartes, Spinoza, Leibniz, Hume, Kant, Hegel, and contemporary problems.

PHYSICAL AND HEALTH EDUCATION

The following courses are designed primarily for teachers and supervisors of physical education in public schools, and for students who wish to supplement the preparation they may have received in colleges or professional schools. The courses are also open to other students and to teachers who may wish to take either the theory or practice courses or both, and whose application has been approved by the Chairman of the Summer Session.

S 1. History—How Men Have Lived. Credit two hours. Daily except Sat., 9. *GS 134.* Professor YOUNG.

An historical survey of the distinguishing characteristics of various peoples as to habits of living and forms of physical activity, and the part these have played in their national development.

S 2. Organization and Administration of Play, Athletics, and Gymnastics. Credit two hours. Daily except Sat., 8. *GS 134.* Professor YOUNG.

The social and educational values of play, with special emphasis upon the management and supervision of high school athletics, recreation centers, scouting, and camp activities.

S 3. Theory of Physical Education and Methods of Teaching. Credit two hours. Daily except Sat., 10. *GS 134.* Professor YOUNG.

The object and scope of physical education; the principles and technique involved in its teaching; arrangement, classification, and progression of exercises.

S 7. Industrial Hygiene. Credit one hour. M W F, 12. *Stimson.* Dr. GOULD.

The effect of factory sanitation and of hygiene on the economics of industry; ventilation and illumination; occupational employment of women; child labor; accident prevention; fatigue in industry; preventive medicine in the industries.

This course should be of value to teachers of industrial hygiene and to shop-teachers in the secondary schools.

S 8. The Action of Muscles and Correction of Posture. Credit two hours. Daily except Sat., 11. *Stimson.* Dr. GOULD.

In this course, the names, locations, and actions of the human muscles are studied by means of dissected bodies of man and by stereopticon slides of dissected material. Exercises for the correction of such deformities as flat-feet, lordosis, and round shoulders, are also studied.

This course should be of value to teachers of physical education and of biology in the secondary schools.

S 9. Exercise and Its Physiology. Credit two hours. Daily except Sat., 8. *Stimson.* Dr. GOULD.

In this course, the literature of the effects of exercise on the body will be reviewed and discussed. Such subjects as the "athletic heart", training for athletics, and the chemistry of exercise will have special emphasis. This course is within the scope of anyone interested in exercise or in physiology, although previous elementary courses in physiology and chemistry will be of aid to the student.

This course should be of value to teachers of hygiene and of biology in the secondary schools.

S 12. Swedish and Danish Gymnastics, with tactics. (Women.) Daily except Sat., 12. *Sage Gymnasium.* Miss BATEMAN.

S 13. High School and College Athletics (Women.) Daily except Sat., 5. *Women's Athletic Field.* Miss BATEMAN.

Practical coaching in track and archery. Instruction will also be given in hockey and in basketball if the registration is sufficient.

S 14. Folk Dancing. Daily except Sat., 3. *Sage Gymnasium.* Miss BATEMAN.

S 15. Dancing. Daily except Sat., 4. *Sage Gymnasium.* Miss BATEMAN. Aesthetic and interpretative dancing and technique.

S 18. Tennis. For men and women. 9-12:30, 2-5. *Risley and Sage Courts.* Mr. MURRAY and Mr. MYERS.

Instruction in the fundamentals of tennis, either individually or by pairs. For a series of ten lessons a special charge of ten dollars is made.

HEALTH EDUCATION

These four courses, though they may be taken separately by teachers or nurses having special ends in view, are as a group adapted to the needs of teachers or nurses having special health responsibilities in the school program, for example as health counselors in secondary schools or as supervisors in elementary schools.

S 1. Hygiene of the School Child and Adolescent. Credit two hours. Daily except Sat., 8. *Stimson.* Dr. SMILEY.

In this course an attempt is made to present the principles of personal hygiene especially as they apply to the child or adolescent in his school life.

S 2. Health Supervision of School Children. Credit two hours. Daily except Sat., 10. *Stimson*. Dr. EVANS.

A practical course of lectures and demonstrations designed to familiarize the student with the school medical inspection and the interpretation of its results, with the methods for the control of communicable disease in the school, with the principles of First Aid, and with the supervision of the physically handicapped pupil.

S 3. Mental Hygiene and the School Child. Credit one hour. M W F, 11. *Stimson*. Dr. EVANS.

An approach to the problems of nervousness and emotional instability in the school child.

S 4. Methods and Materials in Health Education. Credit two hours. Daily except Sat., 9. *Stimson*. Dr. SMILEY.

A discussion of health education through the organization of the school health program, through health habit-formation and through classroom instruction in personal and community hygiene.

The following subjects, which are required for the New York State Teacher's Certificate in Physical Education, and for which regular University credit is given, are offered in the Summer Session: Education, English, Foreign Language, Chemistry, Physiology, History, Biology, Psychology, Educational Psychology, Zoology, Economics.

PHYSICS

Demonstration Lectures. A series of experimental demonstrations covering the entire field of physics. Little time will be spent on the development of the related theory, this being left for the classroom work of courses S 3-S 12, of which these lectures are a part. Teachers may find in these demonstrations valuable suggestions for their own work.

Daily, 8. *Rockefeller A.* Assistant Professors HOWE and GRANTHAM.

S 3. Introductory Experimental Physics. Credit three hours. Demonstration lectures, recitations, and laboratory work covering mechanics, sound, and light.

Lectures, M W F, 8. *Rockefeller A.* Recitations, M W F, 9. Assistant Professor GRANTHAM. Written quiz, M, 10 or 11, as arranged. Laboratory, T Th, 1:40-4:00. *Rockefeller 220*. Mr. ZELLER. Fee, \$5.

S 4. Introductory Experimental Physics. Credit three hours. Demonstration lectures, recitations, and laboratory work covering heat, magnetism, and electricity.

Lectures, T Th S, 8. *Rockefeller A.* Recitations, T Th S, 9. Assistant Professor HOWE. Written quiz, Th, 10 or 11, as arranged. Laboratory, W F, 1:40-4:00. *Rockefeller 220*. Mr. ZELLER. Fee, \$5.

This course must be accompanied by Course S 3 or preceded by a study of mechanics in either high school or college physics.

Register for this course in *Rockefeller 220*.

Teachers of secondary school physics may, with the approval of the professors concerned, substitute the work of course S 90 for the recitations of courses S 3 and S 4.

S 11. Introductory Experimental Physics. Credit four hours. Mechanics, sound, and light. Prerequisite Trigonometry. Entrance physics advised.

This course is the substantial equivalent of course 11 given in the regular session and required of freshmen engineering students.

Lectures, M W F, 8. *Rockefeller A.* Recitations, M W F, 9. Problems, T Th S, 8. Written quiz, M, 10. Laboratory, three periods a week, T W Th F afternoons, as arranged. Assistant Professor GRANTHAM. Fee, \$5.

Register for this course in *Rockefeller 234*.

S 12. Introductory Experimental Physics. Credit four hours. Magnetism, electricity, and heat. Prerequisite Trigonometry and a study of mechanics in either high school or college physics.

Lectures, T Th S, 8. Recitations, T Th S, 9. Problems, M W F, 8. Written quiz, Th, 10. Laboratory, three periods a week, T W Th F afternoons, as arranged. Assistant Professor HOWE. Fee, \$5.

Register for this course in *Rockefeller* 234.

S 29. General Physics. Credit three hours. Theory and problems covering selected topics in magnetism and electricity. Prerequisite Physics 11 and 12, or their equivalent, and the calculus. Recitations, daily, 11. *Rockefeller* 103. Assistant Professor GRANTHAM.

S 34. Physical Measurements. Credit two hours. Three laboratory periods a week. Prerequisite Physics 3 and 4 and Mathematics 5a and 5b or their equivalent. Physical measurements in properties of matter, mechanics, heat, light, magnetism, and electricity. Laboratory open T W Th F, 1:40-4:00. *Rockefeller* 252. Assistant Professor GRANTHAM. Fee, \$5.

S 60. Physical Experiments. Credit one to three hours. Prerequisite Physics 3 and 4 and Mathematics 3 or their equivalent. Laboratory work in mechanics, properties of matter, heat, sound, light, electricity. For students of less experience physical principles will be emphasized; for those of more experience either in physics or in mathematics opportunity will be given to study methods of measurements, sources of error, the adjustment and use of instruments of precision, and graphical methods of interpreting results. The instruction is individual and will be adjusted to meet the needs of each student. Laboratory open daily except Sat., 9-12. *Rockefeller* 352. Assistant Professor COLLINS. Fee, \$2.50 a credit hour.

S 90. Teachers' Course. Credit two hours. Lectures and discussions. Daily except Sat., 9. *Rockefeller* 108. Mr. ZELLER.

The selection, organization, and presentation of subject matter; the selection of apparatus for classroom and laboratory.

Personal conferences will be arranged for the discussion of teachers' problems. Teachers are advised to bring with them a copy of the textbook they are using.

Teachers of secondary school physics are urged to consult with the professors concerned regarding the advisability of combining this course with courses S 3 and S 4, which see. Consultation may be by correspondence, or in person at the time of registration in *Rockefeller* 220.

S 106. Advanced Laboratory Practice. Open to students who have had Physics S 60 or its equivalent. Credit varies with the amount of work done. The laboratory is open daily except Sat., 9-12. *Rockefeller* 301. Assistant Professors MURDOCK and COLLINS. Fee, \$2.50 a credit hour.

In this course each student will work independently on a group of experiments selected to meet his own needs and interests. Apparatus and equipment are available for work in a variety of fields, including such experiments as the measurement of the ionization potentials of vapors, the charge and ratio of charge to mass of the electron, the study of photoelectric and thermionic emission, high vacuum technique, the characteristics of vacuum tubes, resonance of high frequency circuits, emission and absorption spectra of x-rays, crystal structure by x-ray methods, the Raman effect, spectral terms and series, spectra from atoms in various stages of ionization and methods of their excitation, and solar spectra; interferometry, the impedance bridge, and the frequency bridge. From the general equipment of the laboratory a student will also find it possible, if he wishes, to devise and assemble apparatus with which he may repeat other experiments or perform new experiments suggested by himself or the instructor.

The sequence of courses S 111 to S 140 is intended to run through three summer sessions. The schedule for the next three summers is: 1932, S 122 and S 140; 1933, S 130 and S 111; 1934, S 121 and S 112. The courses are of the same general character as the corresponding courses given in the fall and spring terms but include somewhat fewer topics. The selection of these topics will be influenced by the interests and needs of the class. To profit by these courses a student should have a knowledge of calculus and should have completed courses in general physics covering the principal topics of the subject. A student who contemplates electing any of these courses is advised to correspond with Professor KENNARD about his preparation for the work. These courses, as also S 106, S 400, S 415, and S 500, may be taken for credit toward an advanced degree in Physics, subject to the requirements of the graduate school. See the *Announcement of the Graduate School*.

[S 111. **Mechanics.** Credit two hours. An introductory study of analytical mechanics and terrestrial and universal gravitation based upon Jean's *Theoretical Mechanics*.] Not given in 1932.

[S 112. **Properties of Matter.** The analysis of stresses and strains and some applications; surface tension; the motion of fluids and the effects of viscosity.] Not given in 1932.

[S 121. **Electricity and Magnetism.** Electrostatic and magnetic fields, direct current phenomena; gaseous, electrolytic, and metallic conduction; chemical and thermal electromotive forces.] Not given in 1932.

S 122. **Electricity and Magnetism.** Electromagnetism, variable currents, electric oscillations. Text: Page and Adams, *Principles of Electricity*. Daily except Sat., 8. *Rockefeller* 104. Professor KENNARD.

[S 130. **Light.** Geometrical optics; thick lenses; optical instruments. Physical optics: interference, diffraction, polarization. Houston's *Treatise on Light* will be used as a text.] Not given in 1932.

S 140. **Heat.** A general discussion based upon Edser's *Heat*, with particular attention to the application of kinetic theory and thermodynamics. Daily except Sat., 9. *Rockefeller* 103. Professor KENNARD.

S 400. **Introduction to Wave Mechanics.** Credit two hours. Prerequisite a thorough general course in physics and calculus. Daily except Sat., 12. *Rockefeller* C. Associate Professor HOUSTON.

An introduction to the principles and methods used in the solution of problems involving the mechanics of electrons, which will touch briefly on the theory of spectra, the collision of electrons with atoms, dispersion, and the theory of electrons in metals. The subject will be treated very largely from the point of view of Schrodinger's wave mechanics.

S 415. **Special Topics for Investigation.** Students who are prepared to profit by the use of the library and laboratory facilities of the Department in the study of some special topic or in investigation will be given an opportunity to do so. This work may be taken in connection with or independently of any of the above courses and will be under the direction of one or more members of the staff, with whom frequent conferences should be arranged. Credit varies with the nature and amount of work done. Students interested are advised to correspond with Professor MURDOCK.

S 500. **Selected Topics in Modern Theoretical Physics.** Two or three meetings each week at hours to be arranged. Associate Professor HOUSTON.

A discussion of one of the following topics: the theory of complex atomic spectra, the electron theory of solids, or the interaction of matter and radiation. The final selection of the topic will be determined after consultation with the class.

Seminary. Reports and discussions of recent work in Physics. M, 2:30. *Rockefeller* C.

PHYSIOLOGY AND BIOCHEMISTRY

BEHAVIOR

The experimental study of behavior has become an important division of modern biology. It is, moreover, a field of study which is intimately related to the sciences of psychology, education, sociology, and medicine. The courses described below serve a double purpose. In the first place, a general biological introduction to the study of behavior and a review of current theories give the necessary orientation for experimental work for those students not primarily interested in biological science. This purpose is served by courses S 1 and S 2. For those who have completed either or both of these courses and who wish to undertake an experimental investigation, course S 3 provides regular summer session credit for research.

S 1. The Biological Basis of Behavior. Credit two hours. Daily except Sat., 12. *Stimson Amphitheatre*. Professor LIDDELL.

A resumé of the structural and functional arrangements upon which behavior depends will be followed by a critical analysis of current theories.

S 2. The Conditioned Reflex. Credit two hours. Daily except Sat., 2. *Stimson Amphitheatre*. Professor LIDDELL.

A systematic investigation of the facts upon which the theory of the conditioned reflex is based. Laboratory demonstrations and moving pictures will aid in giving a clear conception of the factual material. The theory itself will be carefully examined, with emphasis on its applications in psychology, medicine, and education.

S 3. Advanced Work and Research in Behavior. Hours and credit to be arranged. Professor LIDDELL.

Opportunities for experimental investigation of behavior will be available to properly qualified students. Detailed study of the experimental literature may also be pursued for credit.

PSYCHOLOGY

S 1. Psychology. Credit two hours. Lectures and recitations, daily except Sat., 9. *GS C.* Professor WELD and Mr. MACLEOD.

A general introduction to the psychological study of man from the experimental point of view. The course opens with a brief discussion of the nature of psychology, of the problems which psychology is called upon to face, and of the methods at its disposal for their solution. It then sets forth in order the facts and laws of psychological function. Throughout the course use will be made of the unique collection of demonstrational apparatus which composes the equipment of a special laboratory in Goldwin Smith Hall.

Textbook: Bentley, *The Field of Psychology*.

S 2. Attention. Credit two hours. Daily except Sat., 9. *Morrill 59*. Assistant Professor JENKINS.

A review of the experimental studies of attention and a discussion of their psychological and practical significance. From time to time, the relevance of the facts and laws of attention to problems of industry, of education, and of everyday life will be pointed out.

S 3. Applications of Psychology. Credit two hours. Daily except Sat., 8. *Morrill 59*. Assistant Professor JENKINS.

A critical interpretation of the attempt to apply the facts and methods of psychology to the solution of problems in vocational selection, in industrial 'efficiency,' in advertising and selling, and in other technological fields. Readings assigned in standard journals and books.

S 5. Psychological Defects of Everyday. Credit two hours. Daily except Sat., 10. *Morrill 42*. Professor BENTLEY.

Common defects and disturbances in the psychological functions. Inappropriate and ungoverned actions and emotions: suspicion, fear, hatred, self-pity; phantasy and unhealthy beliefs, opinions, and conduct.

S 7. Varieties and Schools of Psychology. Credit two hours. Lectures and recitations, daily except Sat., 11. *Morrill 41.* Professor BENTLEY.

An exposition of the current schools of psychology. The historical derivation of present doctrines and points of view. The significance of Behaviorism, Psychoanalysis, Configurationism, Reflexology, and other recent proposals. Fundamental knowledge of psychology will greatly aid the student in this course.

S 8. General Psychology: Problems and Points of View. Credit two hours. Lectures and recitations, daily except Sat., 11. *GS C.* Professor WELD.

This course presupposes S 1 or its equivalent. It presents a survey of the problems and points of view in the entire field of scientific psychology. Beginning with an investigation of typical conceptions of general psychology, the course leads on to the psychology of individual differences, the psychology of the abnormal, animal psychology, psychological development in the race and in the individual, social psychology, and the psycho-technologies.

Textbook: Weld, *Psychology as Science*.

S 9. Graduate Seminary. Daily, by appointment. *Psychological Laboratory, Morrill Hall.* Professor BENTLEY.

Individual researches and informal study.

PUBLIC SPEAKING

SPEECH TRAINING: ORAL ENGLISH: DRAMATIC ART

All summer courses are planned to meet the special needs of teachers. Either S 3 or S 30 (not both) may be counted as a course in methods approved by the New York State Department of Education for the teachers' certificate.

Students should register with the individual instructors, who will be in their offices on registration day and on the first day of instruction. For further details about registration consult Mr. MUCHMORE, *GS 27*.

For information about advanced work in Speech Training and Phonetics consult Mr. THOMAS, *GS 23*; in Rhetoric and Public Speaking, Mr. WAGNER, *GS 28*; in Dramatic Production, Mr. STANTON or Mr. DRUMMOND, *GS 33*.

S 1. Public Speaking. Credit two hours. Daily except Sat., 11. *GS 21.* Assistant Professor WAGNER.

A practical training for speaking in public. Study of delivery, of methods of preparation, and of rhetorical forms; practice in speech making and drill in delivery. High-school teachers will find the methods applicable to their work in public speaking and oral English. Regular students passing S 1 are admitted to Public Speaking 2.

[S 2. **Persuasive Speaking.** Credit two hours.] Not given in 1932.

S 3. Teachers' Course in Oral English and Public Speaking. Credit two hours. Daily except Sat., 12. *GS 236.* Assistant Professor MUCHMORE.

For secondary teachers of English and public speaking. Aims, problems, standards, and methods in oral English, public speaking, and speech training.

[S 8. **Voice Training.** Credit one hour.] Not given in 1932.

S 10. Oral Interpretation of Literature. Credit two hours. Three sections: daily except Sat., 9. *GS 236,* Assistant Professor MUCHMORE; daily except Sat., 12. *GS 21.* Assistant Professors THOMAS and WOHL.

Principles of reading and oral interpretation of literature.

S 21. Principles of Public Speaking. Credit two hours. Daily except Sat., 12. *GS 26.* Assistant Professor WAGNER.

For graduates and upperclassmen. Readings, reports, and discussions.

Introductory survey: functions of speech in society; leading theories of public address; problems of debate and group discussion; psychology of persuasion; principles studied in representative speeches.

S 30. Teachers' Course in Speech Training. Credit two hours. Daily except Sat., 9. *GS 26.* Assistant Professor THOMAS.

For secondary and elementary school teachers. A study of English phonetics, pronunciation, and the improvement of speech.

[**S 31. Advanced Phonetics and Speech Training.** Credit two hours. Prerequisite Public Speaking 30 or the equivalent.] Not given in 1932.

S 41. Dramatic Production. Credit two hours. Daily except Sat., 11. *GS B.* Assistant Professor WOEHLE and Mr. LENROW.

Theory of stage direction; choice of plays; practical phases of production; one-act plays rehearsed; practice with the Summer Theatre. Students in S 41 should take S 10 or offer its equivalent.

S 45. Stagecraft. Credit two hours. Daily except Sat., 10, with additional laboratory hours to be arranged. Stage laboratory. *Morse.* Assistant Professor STANTON and Mr. LENROW.

An elementary course in stage theory and practice; the planning of small theatres; design and construction of scenery; lighting; with attention to other contributory crafts and to the related principles of stage direction. Laboratory fee, \$5.

S 60. Seminary in Rhetorical Theory. Hours to be arranged. First meeting July 11, 2 P. M., *GS 28.* Assistant Professor WAGNER.

For graduates. The topic in 1932 will be Rhetorical Criticism.

S 63. Principles of Voice Training and Speech Correction. Credit two hours. Hours to be arranged. *GS 23.* Assistant Professor THOMAS.

For graduates and other students having sufficient preparation for independent work. Readings in the sciences underlying voice-training and speech with a critical survey of theories and methods.

S 66. Dramatic Art. Credit two hours. M W 2-4, and an additional hour to be arranged. *GS 21.* Professor DRUMMOND or Assistant Professor STANTON.

For college graduates prepared for advanced work in the theory of dramatic production. Readings, reports, and lectures.

S 90. Theatre Practice. Credit one hour if taken in connection with S 41, S 45, S 66: certificate of attendance to others who may be admitted. Hours to be arranged. Assistant Professor STANTON, assisted by the Summer Theatre Staff.

Open to undergraduates and graduates who are taking or have taken one or more of the courses in Dramatic Production, and to other qualified persons by consent of the instructor. Practical stage management in the Summer Theatre supplementing the work of the courses in Dramatic Production. Registration will be taken in the several classes in Dramatic Production during the first week of the session.

The Summer Theatre. Under the direction of Professor DRUMMOND: Assistant Professor STANTON, assisted by Mr. VOSS, Mr. D'ANGELO, Miss WORKMAN, Mr. SCANLAN, Mr. LENROW and Assistant Professor WOEHLE.

During the Summer Session weekly performances will be given by the student repertory Summer Theater Company. Qualified members of the courses in Dramatic Production may compete for places in the casts of Summer Theatre plays. For this work they will register in the regular classes in Dramatic Production during the second week of the session.

Speech Clinic. For students working under the supervision of the Department of Public Speaking. By appointment. *GS 23.* Assistant Professor THOMAS.

ROMANCE LANGUAGES

FRENCH

S 1. Elementary Course. Credit four hours. Daily except Sat., 8 and 12. *GS 290.* Mr. CHOQUETTE. Entrance credit, one unit.

The object of this course is twofold: first, to give beginners a thorough drill in the essentials of French pronunciation, grammar, and reading; second, to offer to teachers an opportunity of studying the methods of presentation of these subjects to beginners.

S 2. Intermediate Course. Credit four hours. Daily except Sat., 8 and 12. *GS 283.* Mr. ANDRUS.

Entrance credit, one unit. Prerequisite course S 1 or its equivalent.

S 3. Advanced Course. Credit four hours. Daily except Sat., 8 and 12. *GS 227.* Assistant Professor PELMONT.

Entrance credit, one unit. Prerequisite course S 2 or its equivalent.

S 4. Advanced Translation. Credit two hours. Daily except Sat., 9. *GS 164.* Prerequisite course S 3 or its equivalent. Mr. CHOQUETTE.

S 5. Elementary Composition and Conversation. Credit two hours. Daily except Sat., 11. *GS 290.* Prerequisite course S 3 or its equivalent. Assistant Professor BYAM.

S 9. Advanced Composition and Conversation. Credit two hours. Daily except Sat., 8. *GS 281.* Assistant Professor PELMONT.

Rapid translation from standard English texts into French; frequent theme-writing. This course is conducted in French.

S 23. Introduction to French Philology. Credit two hours. Daily except Sat., 10. *GS 290.* Mr. ANDRUS.

[**S 24. Voltaire and His Time.** Credit two hours. Daily except Sat., 10. *GS 277.* Professor GUERLAC.] Not given in 1932.

S 27. Contemporary French Poetry. Credit two hours. Daily except Sat., 11. *GS 277.* Professor MASON.

Lectures and discussions of special topics, with extensive outside reading and reports.

[**S 31. Phonetics.** Credit two hours. Daily except Sat., 9. *GS 283.* Professor MASON.] Not given in 1932.

[**S 33. Methods of Teaching French.** Credit two hours. Daily except Sat., 9. *GS 177.* Professor MASON.] Not given in 1932.

S 35. France of Today. Credit two hours. Daily except Sat., 12. *GS 281.* Assistant Professor PELMONT.

Lectures in French on the social, intellectual, and political life of the present.

S 42. French Literature of the XVIIth Century. Credit two hours. Daily except Sat., 10. *GS 277.* Assistant Professor BYAM.

S 47. French Seminary. Credit two hours. M W F, 9. *French Seminary Room, Library.* Professor MASON.

Discussion of special topics in the field of modern French literature. This course is especially for graduate students and candidates for the degree of Master of Arts.

S 50. Phonetics of English, French, Spanish, German, Latin. See Latin, course S 50.

French Lectures. A series of lectures in French dealing with French national life will be given by the members of the instructing staff on Wednesday evenings at 8 o'clock in *Goldwin Smith Hall*, Room 290.

French Conversation. In *Prudence Risley Hall* special tables are arranged under competent supervision for conversation in French.

SPANISH

S 1. Course for Beginners. Credit four hours. Daily except Sat., 8 and 12. *GS 277.* Mr. FLORES.

Entrance credit, one unit.

S 4. Advanced Translation. Credit two hours. Daily except Sat., 9. *GS 277.* Professor DALE.

S 5. Composition and Conversation. Credit two hours. Daily except Sat., 11. *GS 281.* Mr. FLORES.

Special attention will be given to free composition. The course is conducted in Spanish.

Courses S 4 and S 5 taken together have an entrance credit value of one unit.

S 10. Spanish Literature. Credit two hours. Daily except Sat., 10. *GS 281.* Professor DALE. Prose of the Golden Age.

Lectures, readings, classroom discussions.

[S 11. The Spanish Language. Credit two hours. Daily except Sat., 10. *GS 281.* Professor DALE.

A study of the historical development of the language; philology; phonetics.] Not given in 1932.

S 30. Spanish Seminary. Credit two hours. M W F, 11. *Romance Seminary Room, Library.* Professor DALE.

Discussion of special topics in the field of Spanish literature. Thesis subjects and related material for graduate students.

S 50. Phonetics of English, French, Spanish, German, Latin. See Latin, course S 50.

SUMMER SESSION OF THE LAW SCHOOL

COURSES

June 21 to July 30, 1932

Evidence. Professor L. P. WILSON, Cornell Law School. Credit three hours.
Trusts. Professor E. E. CHEATHAM, Columbia Law School. Credit three hours.

Sales. Professor R. TURNER STEFFEN, Yale Law School. Credit three hours.

Admiralty. Professor G. H. ROBINSON, Cornell Law School. Credit two hours.

Property II. Professor W. H. FARNHAM, Cornell Law School. Credit two hours.

Administrative Law. Professor MACDONALD, Cornell Law School. Credit two hours.

Administration of Insolvent Estates. Professor BILLIG, West Virginia Law School. Credit two hours.

August 1 to August 27, informal comparative study of **Remedies: Legal and Equitable, Contract and Tort**, conducted by Professors WILSON, STEVENS, and WHITESIDE, of the Cornell Law School. Open to a limited group of students.

For Announcement containing full information, address The Secretary, Cornell Law School, Ithaca, New York.

THE GRADUATE SCHOOL OF EDUCATION

OFFICERS

LIVINGSTON FARRAND, A.B., M.D., L.H.D., LL.D., President of the University.
ALBERT RUSSELL MANN, B.S., A.M., D.Sc., D.Agr., Provost of the University.
JULIAN EDWARD BUTTERWORTH, Ph.D., Director of the Graduate School of Education.
RIVERDA HARDING JORDAN, Ph.D., Chairman of the Summer Session.
ROLLAND MACLAREN STEWART, Ph.D., Director of the New York State Summer Session at Cornell University.

STAFF OF INSTRUCTION

THOMAS LEVINGSTON BAYNE, jr., Ph.D., Assistant Professor of Rural Education.
MURIEL BRASIE, M.A., Assistant Professor of Home Economics.
WILLIAM H. BRISTOW, M.A., Deputy Superintendent, Pennsylvania State Department of Public Instruction.
JULIAN EDWARD BUTTERWORTH, Ph.D., Professor of Rural Education.
CHARLES B. CLARK, M.A., Director of Vocational Schools, Schenectady, N. Y.
THEODORE HILDRETH EATON, Ph.D., Professor of Rural Education.
EMERY NELSON FERRISS, Ph.D., Professor of Rural Education.
ALBERT MARTIN FIELD, Ph.D., Professor of Agricultural Education, University of Minnesota.
CHARLES E. FINCH, B.S., Director of Junior High School Grades, Rochester, N. Y.
FRANK SAMUEL FREEMAN, Ph.D., Assistant Professor of Education.
ARTHUR KENDALL GETMAN, B.S., Chief, Agricultural Education Bureau, State Department of Education.
EVA LUCRETIA GORDON, Assistant in Rural Education.
HANS WELLER HOCHBAUM, B.S.A., Field Agent, Cooperative Extension Work, United States Department of Agriculture.
EDWIN RAYMOND HOSKINS, M.S.A., Instructor in Rural Education.
MELVIN LOVELL HULSE, M.A., Instructor in Education; Secretary of the Bureau of Educational Service.
ELIZABETH CAROLINE JACOBSON, M.A., Instructor in Rural Education.
RIVERDA HARDING JORDAN, Ph.D., Professor of Education.
PETER PAUL KELLOGG, B.S., Assistant in Rural Education.
HORACE KIDGER, A.M., LL.B., Head of Department of Social Studies, High School, Newton, Massachusetts.
PAUL J. KRUSE, Ph.D., Professor of Rural Education.
FRANK EUGENE LUTZ, Ph.D., Associate Curator of Education and Curator of Entomology, American Museum of Natural History, New York City.
CLYDE B. MOORE, Ph.D., Professor of Rural Education.
CHARLES L. MOSHER, Ph.M., Director of Attendance, New York State Department of Education.
E. LAURENCE PALMER, Ph.D., Professor of Rural Education.
JAMES BECKLEY PALMER, Ph.D., Director, Department of Rural Education, State Normal School, Potsdam, N. Y.
ROLLAND MACLAREN STEWART, Ph.D., Professor of Rural Education.
VIVIAN T. THAYER, Ph.D., Educational Director, Ethical Culture Schools, New York City.
GEORGE M. WILEY, Ph.D., Assistant Commissioner of Education, New York State Department of Education.
ANDREW LEON WINSOR, Ph.D., Assistant Professor of Rural Education.

The Graduate School of Education is composed of the Department of Education in the College of Arts and Sciences and the Department of Rural Education in the College of Agriculture. The De-

partment of Education functions as a part of the University Summer Session and the Department of Rural Education is organized under the New York State Summer Session. Tuition fees are charged in accordance with the scale explained on page 14.

DEPARTMENT OF EDUCATION

Courses S 1, S 2, S 3, and S 4, will be found especially helpful to college graduates who are preparing for examinations in professional subjects as outlined in the New York State Syllabus and Course of Study for the renewal of the College Graduate Certificate Limited. The State Department of Education will hold an official examination for such candidates at Ithaca on August 15 and 16.

Under certain conditions teachers may waive the state examination by completing an approved course of study in the Summer Session. Information regarding details of such a course may be had by consulting Professor R. H. JORDAN, Goldwin Smith Hall 252, either in person or by letter.

The following courses may not be taken for graduate credit except with the approval of the instructor and the chairman of the student's special committee: S 1, S 2, S 3, S 4, S 20.

S 1. Educational Psychology. Credit two hours. Daily except Sat., 11 GS 256. Assistant Professor FREEMAN.

A study of the learning process and its application to educational theory and practice; the original nature of man; reflex action and instinct; memory, learning, and reasoning; individual differences; social co-operation.

S 2. Principles of Education. Credit two hours. Daily except Sat., 8. GS 245. Dr. PALMER.

A study of education from the sociological standpoint: infancy, heredity, and eugenics; the problem of aim; formal discipline; social and personal objectives; the curriculum; the studies and their functions.

S 3. History of Education. Credit two hours. Lectures, recitations, and prescribed readings. Daily except Sat., 9. GS 256. Mr. HULSE.

The purpose of this course is to give an understanding of present educational values and practices through an historical consideration of their origin and development.

The topics treated are to a great extent those emphasized in the syllabus for the New York State Teachers' Certificate; education in primitive and barbaric societies; the rise of the school as an institution; Greek and Roman education; scholasticism, humanism, and realism; the 'psychological' movement; the origin and nature of specifically modern tendencies in education.

S 4. Secondary School Methods. Credit two hours. Daily except Sat., 10 GS 256. Mr. HULSE.

A study of the principles underlying vital instruction in its intellectual, emotional, and motor phases: the use of supplementary devices; the project; motivation; types of subject matter; lesson assignment; questioning; the art of study; supervised study; tests and examinations; lesson planning; class management.

The course is planned to meet the New York State Certificate requirement in general method, and is adapted especially to the needs of younger and relatively less experienced teachers. Teachers of longer experience are referred to Course S 226.

S 5. High School Administration. Credit two hours. Daily except Sat., 11. GS 183. Mr. BRISTOW.

A study of the principles basic to administration of the senior and junior high school; the course of study; principles of election; classification of pupils; use of intelligence and achievement tests; the principal as supervisor; building problems; selection and rating of teachers; schedule-making; problems growing out of the experience of the class.

S 6. Philosophy of Education. Credit two hours. Intended for graduate students who by study or experience are well advanced in knowledge of education. M W F, 2-3:30. *GS 256.* Professor EATON.

An examination of the meaning of education in terms of its larger aims and major values. Every student will be called upon to examine in terms of aims and values some phase of educational practice wherein he has a particular interest and a competent knowledge.

S 7. Mental Measurements. Credit three hours. Lectures, prescribed readings, and laboratory. Daily except Sat., 9. *GS 221.* Laboratory hours to be determined. Assistant Professor FREEMAN.

The nature of intelligence. The history of the development of individual and group tests of intelligence; principles underlying their formation and application; their use in school problems, and in fields outside the school. The theory, construction, and use of educational tests. Demonstration in administering tests.

S 9. Special Problems in Education. Professor JORDAN and Assistant Professor FREEMAN will advise students majoring in the Department of Education.

This course is designed to give advanced students an opportunity for study of special problems under personal direction of instructors. The work may consist either of essays and reports on some special topic, or of laboratory practice of an advanced grade. Students interested in work of this nature should consult with some member of the resident staff.

S 10. Problems in School Administration. Credit two hours. T Th, 1:40-4. *GS 236.* Professor JORDAN.

A study of administration of school systems, together with problems peculiar to the administration of secondary schools. The course follows a four-year cycle of material, especially arranged to give graduate students a continuous four-year course. Students may enroll in any unit of this course, and particular attention is paid to the needs of each group. Permission of the instructor must be obtained before enrollment. Papers and reports required.

S 11. Extra-Classroom Activities. Credit two hours. Daily except Sat., 8. *GS 256.* Professor JORDAN.

A study of the place extra-classroom activities should assume in the school program. General principles involved, with special attention given to athletics, dramatics, publications, school finance, music, debate, and school clubs. Individual problems of the class will have special attention.

S 14. The Junior High School. Credit two hours. Daily except Sat., 12. *Stone 203.* Mr. FINCH.

Among the topics considered in this course are: the development of the junior high school idea; the special purposes of the junior high school; types of administrative organization, bases of determining curriculum content and organization; critical analysis of representative curricula and courses of study; special problems of pupil activities, pupil guidance, and adjustment.

S 17. The Curriculum of the Junior-Senior High School. Credit two hours. Daily except Sat., 10. *GS 124.* Mr. FINCH.

Special emphasis will be placed upon the curriculum in its relation to the large aims of the secondary school. The complementary nature of the junior and senior high school will receive particular attention.

S 20. Practice in High School Method. Credit one to three hours. Hours to be arranged. *GS 251.* Mr. HULSE.

This course is limited to students needing credit in practice teaching to meet specific state requirements. Application must be made before June 1 to Mr. M. L. Hulse, 251 Goldwin Smith Hall, Ithaca, N. Y. The work will involve daily observation and practice in the Ithaca High School Summer Session under supervision of selected teachers and under the general direction of the Department of Education. Frequent conferences will be held with the instructor in charge.

S 22. Theories of Learning as Reflected in Educational Practice. Credit two hours. Daily except Sat., 9. *GS 120.* Dr. THAYER.

A survey of representative theories of the learning process with special reference to their influence upon the content and methods of educational practice in modern times. Particular stress will be placed upon contemporary theories of learning and the writings of men such as Dewey, Thorndike, Watson, Bode, Koffka.

Open only to students of graduate standing who have had a course in Educational Psychology and experience in teaching.

S 28. Educational and Vocational Guidance. Credit two hours. Daily except Sat., 9. Mr. BRISTOW. *East Roberts 222.*

A study of the larger aims and problems of guidance in secondary education; of the present status and trends in the guidance movement; of the guidance agencies and resources and methods of utilizing them; of school organization and curricular adjustments appropriate to the ends of guidance, etc.

S 30. Teacher's Course in Social Studies in the Senior High School. Credit two hours. Daily except Sat., 12. GS 225. Mr. KIDGER.

This course considers the content and method of teaching social studies in the senior high school. The interrelation of geography, history, and civics will be emphasized. Especial attention will be given to the most effective methods not only in presenting American history but also in dealing with problems of democracy. A consideration of individual method of measurements, and effective methods of testing, the use of outside reading, maps, charts, diagrams, note books.

S 127. Visual Aids in Teaching. Credit two hours. Daily except Sat., 11. *Fernow 8.* Dr. LUTZ.

A consideration of the use of visual materials and equipment in schools with suggestions for the preparation of materials. Practice will be provided for use of projection apparatus and other equipment.

S 263. Procedures and Techniques in Supervision. Credit two hours. Daily except Sat., 11. GS 221. Professor MOORE.

Designed for superintendents, supervisors, and principals. Students who have not had experience in these fields will be admitted only upon permission of the instructor. A consideration of the nature and purpose of supervision; the improvement of the learning-teaching process; skill in observation; analysis of methods; relationships between general and specific objectives; selection, analysis, and organization of subject matter; measuring and testing results; assisting teachers in professional growth. The experience and needs of the class will determine the emphasis and nature of treatment of these various aspects.

S 276. Principles of Curriculum Building. Credit two hours. Daily except Sat., 10. GS 225. Professor FERRISS.

A consideration of major problems, principles, and techniques in determining educational objectives and curriculum content and organization in elementary and secondary schools.

S 296. The Progressive School Movement. Credit two hours. Daily except Sat., 11. *Stone 102.* Dr. THAYER.

A brief survey of the influences—social, political, economic, and psychological—that have given character to subject matter and teaching methods in the American public school, followed by a critical and constructive appraisal of contemporary tendencies in the progressive school of today.

Open only to administrative and supervisory officers and to teachers with at least two years of experience.

ADDITIONAL COURSES IN EDUCATION

TEACHERS' COURSES IN HIGH-SCHOOL SUBJECTS

The following courses are offered for teachers desiring to study problems of instruction in different high-school subjects. The courses are planned also to meet the requirements of the New York State Department of Education in the issuance of the College Graduate Life Certificate.

TEACHERS' COURSE IN ENGLISH. See English S 5.

TEACHERS' COURSE IN HISTORY. See History S 17.

- TEACHERS' COURSE IN SOCIAL SCIENCE. See Education S 30.
 TEACHERS' COURSE IN HEALTH EDUCATION. See Health Education S 4.
 TEACHERS' COURSE IN LATIN. See Latin S 1.
 TEACHERS' COURSE IN MATHEMATICS. See Mathematics S 20.
 TEACHERS' COURSE IN MUSIC. See Music S 50, S 52.
 TEACHERS' COURSE IN PHYSICS. See Physics S 90.
 TEACHERS' COURSE IN SCIENCE. See Rural Education S 107a, S 126, S 128.
 TEACHERS' COURSE IN PUBLIC SPEAKING. See Public Speaking S 3, S 30.

DEPARTMENT OF RURAL EDUCATION

All courses numbered 200 or above and courses S 6, S 22, and S 28 are intended primarily for graduate students. Those who do not hold a bachelor's degree should, therefore, secure the approval of the instructor before registering for any of these courses.

A candidate for an advanced degree should make certain that his selection of courses has the approval of the chairman of his special committee. He should also indicate to the instructor of the course that he is seeking graduate credit.

EDUCATIONAL PSYCHOLOGY AND MEASUREMENT

S 111a. **Psychology for Students of Education.** Credit two hours. Daily except Sat., Section 1, 10, *Plant Science* 143; Section 2, 11, *East Roberts* 222. Assistant Professors BAYNE and WINSOR.

A point of view in psychology for students of education. The nature of man with emphasis on the tendencies to behavior basic to learning. The learning process. Individual differences.

S 112. **Psychology for Extension Workers.** Credit two hours. M W F, 7:30-8:50. *Stone* 203. Professor KRUSE.

A point of view in education and in psychology for extension workers. The nature of man with emphasis on the tendencies basic to the effective influencing of human behavior. How human beings come to be what they are. How they differ in quantity and quality of traits.

S 116. **Psychology for Students of Child Training.** Credit two hours. Daily except Sat., 10. *Stone* 102. Professor KRUSE. Prerequisite 111 or S 111a or equivalent. Students offering an equivalent are requested to confer with instructor before registering. Thus course may be taken in lieu of 116 given during the regular year.

S 22. **Theories of Learning as Reflected in Educational Practice.** Credit two hours. Daily except Sat., 9. *GS* 120. Dr. THAYER.

A survey of representative theories of the learning process with special reference to their influence upon the content and methods of educational practice in modern times. Particular stress will be placed upon contemporary theories of learning and the writings of men such as Dewey, Thorndike, Watson, Bode, Koffka.

Open only to students of graduate standing who have had a course in Educational Psychology and experience in teaching.

S 150. **Educational Measurement in the Elementary School.** Credit two hours. Daily except Sat., 9. *Roberts* 292. Assistant Professor WINSOR.

A study of individual and group tests in relation to development, diagnosis, and classification of young children.

S 151. **Educational Measurement in the Junior and Senior High School.** Credit two hours. Daily except Sat., 8. *Stone* 102. Assistant Professor BAYNE.

A beginning course dealing with measurement in relation to the classification of pupils, the determination of the progress of pupils, individual difficulties, and the determination of final marks.

EDUCATIONAL METHOD

S 107a. **The Teaching of Nature Study and Elementary Science.** Credit two hours. Lectures, M W F, 10. *Fernow* 122. Field and laboratory work, T Th, 10-12:30 or 1:40-4. *Fernow* 8. Professor PALMER, Dr. LUTZ, Miss GORDON, Mr. KELLOGG.

To acquaint teachers with the principles and methods of education through nature study and to give practice which will permit them to carry on the work independently. The lectures present types of organization of nature-study work and methods of presenting subject matter. Six field trips and six laboratory periods furnish experience in the study of birds, mammals, trees, herbs, insects, and earth science, and include practical methods for conducting work in nature study.

Laboratory and field work open only to those taking the work for credit.

S 121a. Method and Procedure in Teaching in the Elementary School. Credit two hours. Daily except Sat., 2. *Stone* 102. Dr. PALMER.

A consideration of the problems of teaching: how to motivate study, cultivate interest, organize teaching materials, select and solve problems, plan class procedure, construct and use questions, drill, measure the results of teaching, etc., to make clear the principles which are fundamental to efficient instruction.

S 126. The Teaching of Science in the Rural Secondary School. Credit two hours. Daily except Sat., 9. *Fernow* 16. Professor PALMER.

A study of the science program in rural high schools; the functions of the recognized high-school sciences such as general science, biology, zoology, physics, chemistry, and earth science, together with the methods of teaching. Designed primarily for experienced teachers.

S 127. Visual Aids in Teaching. Credit two hours. Daily except Sat., 11, *Fernow* 8. Dr. LUTZ.

A consideration of the use of visual materials and equipment in schools with suggestions for the preparation of materials. Practice will be provided for use of projection apparatus and other equipment.

S 128. The Teaching of Natural History in the Field. Credit three hours. Lecture, M, 12. *Fernow* 8. Field work, F, 1:40 to S, 8 p. m. Professors PALMER, WRIGHT, NEEDHAM, HARRIS, HOSMER, WIEGAND, and ALLEN, Dr. LUTZ, Miss GORDON, Mr. KELLOGG.

This course is designed primarily to acquaint experienced science teachers with methods of field studies suitable for use in public school teaching and in teacher-training institutions. Trips will combine a variety of ecological sites with the observation of methods used by leaders in botany, ornithology, general ecology, entomology, forestry, astronomy, and paleontology. Practice will be given in field teaching under supervision. Students will live in the field from Friday noon to Saturday night. The privilege of advance registration is extended. Membership of the class will be tentatively fixed June first. Enrollment is limited to twenty. Applicants should file with Professor E. L. Palmer detailed records of their teaching experience and training in science. Students will furnish their own bedding, pup tents, or sleeping bags. Meals and transportation will be supplied at cost, which for the six weeks will not exceed \$20. This is to be paid in advance. Open only to those taking work for credit.

S 132. The Teaching of Vocational Agriculture in the Secondary School. Credit two hours. Lectures, M T Th F, 9. Laboratory, W, 1:40-4. *Stone* 203. Mr. HOSKINS.

Designed for teachers of agricultural courses or for students preparing to teach such courses. A study of the problems confronting the teacher of agriculture; the vocational point of view in instruction; determination of courses of study from field studies and analyses; forms used in teaching; the selection of materials and their organization for teaching purposes; the relationship of the agriculture teacher to the other agencies of agricultural education in the community.

S 132d. Laying Out the Agricultural Program for the Secondary School. Credit one hour. Daily except Sat., 8. *Roberts* 292. Laboratory, T Th, 1:40-5:00. July 11-22. *Stone* 203. Mr. GETMAN.

A special unit course designed to aid teachers of agriculture in their work of organizing departmental programs according to local and state needs.

S 132g. Planning Supervised Practice Programs in Agriculture for the Secondary School. Credit one hour. Daily except Sat., 8. *Roberts 292. Laboratory, T Th, 1:40-5. August 8-19. Stone 203. Mr. HOSKINS.*

A special unit course designed to aid teachers of agriculture in the secondary school to develop long-time project plans in relation to units of instruction and courses of study. Specific cases of boys in neighboring departments will furnish the problem of the course. Applications will be made to the situations and the needs of the group enrolled.

S 142a. Organization and Methods of Teaching Industrial Arts. Credit two hours. Daily except Sat., 8. *Agricultural Engineering Laboratory.* Open to students of vocational education who are interested in the teaching of industrial arts. *Mr. CLARK.*

A course required for certification to teach Industrial Arts Courses. Consideration is given to the point of view in industrial arts education; aims and objectives; the organization of materials and the courses of study for the small high school; related subject matter commonly taught; the management of the shop, including shop equipment and shop procedures.

S 142b. Principles and Problems of Industrial Arts and Vocational Education. Credit two hours. M W F, 11. *Laboratory, T W, 1:40-4. Agricultural Engineering Laboratory. Mr. CLARK.*

A course designed for teachers of Industrial Arts, and for district superintendents and principals of smaller schools and of consolidated schools who are responsible for the administration of the program of Industrial Arts and Agricultural Education. Time will be given to the setting up of problems and projects appropriate to small communities. Guidance involving consideration of junior wage earning, school attendance, child-labor laws, placement and follow-up plans, is one of the more important problems to be considered.

S 142c. Guidance Problems in Industrial Arts. Credit one hour. M W F, 9-11. *Laboratory, F, 1:40-5. July 11 to 22. Agricultural Engineering Laboratory. Mr. CLARK.*

A special unit course for teachers of industrial arts who have the responsibility of vocational guidance in village communities.

S 250. Seminary in Agricultural Education. Open to students in agricultural education who are registered for S 131, S 194, S 245, or S 277. Credit one hour. M W, 2-3:30. *East Roberts 232. Professor STEWART.*

Typical pieces of research in agricultural education. Individual problems will furnish the basis for discovering the principles involved in original studies.

EDUCATIONAL ADMINISTRATION AND SUPERVISION

S 14. The Junior High School. Credit two hours. Daily except Sat., 12. *Stone 203. Mr. FINCH.*

Among the topics considered in this course are: the development of the junior high school idea; the special purposes of the junior high school; types of administrative organization; bases of determining curriculum content and organization; critical analysis of representative curricula and courses of study; special problems of pupil activities, pupil guidance, and adjustment.

S 17. The Curriculum of the Junior-Senior High School. Credit two hours. Daily except Sat., 10. *GS 124. Mr. FINCH.*

Special emphasis will be placed upon the curriculum in its relation to the large aims of the secondary school. The complementary nature of the junior and the senior high school will receive particular attention.

S 175a. The Principalship of the Centralized and Village School. Credit two hours. Twice daily except Sat., August 1 to August 12. First meeting, M, 8. *Fernow 210. Dr. WILEY.*

A special unit course dealing with the practical problems of principals of smaller high schools who are also responsible for the organization, administration, and supervision of the elementary grades.

S 235c. Home-Making in the Junior High School. Credit two hours. Daily except Sat., 8. *Roberts 392.* Miss JACOBSON.

This course is concerned with the homemaking curriculum of the seventh and eighth grades and of the junior high school. It will include a study of pupil needs and interests as a basis for building a course of study. Consideration will be given to correlation with other school subjects and the use of community resources and activities as contributing factors to a satisfactory program. It is suggested that S 276 or S 14 or an equivalent precede or parallel this course.

S 237. Home-Making Materials for the Elementary School Curriculum. Credit two hours. Daily except Sat., 10. *Stone 309.* Miss JACOBSON.

The field of home economics is rich in materials vital to the child's experiences and to the aims of education as expressed in the cardinal principles of education. The purpose of this course is to consider the selection and use of such curricular materials for the first six grades. Open to teachers with or without home-economics training.

S 238. Evaluating Achievement in Home Economics Education. Credit two hours. Daily except Sat., 9. *Stone 309.* Miss BRASIE.

This course is concerned with the means of determining progress and with methods of evaluating accomplishment. It includes a study of types of achievement in the various fields of home economics; the study and construction of appropriate, valid, and reliable methods of evaluation, interpretation, and use of results.

S 245. College Preparation of Teachers of Agriculture for Departments in Secondary Schools. Credit two hours. Daily except Sat., 9. *East Roberts 232.* Professor STEWART.

A study of the organization and conduct of curricula utilized in the education of prospective teachers of agriculture for departments of vocational agriculture in high schools.

S 261. The Administration of Rural Schools. Credit two hours. Daily except Sat., 8. *Stone 309.* Professor BUTTERWORTH.

A consideration of problems in administration for the attainment of these objectives: (1) an understanding of significant questions that face the rural school administrator; (2) a comprehensive view of the organization of education in the state, particularly with reference to the rural situation; (3) the development of principles for the guidance of the administrator in attacking his problem. The approach will be through an analysis of specific administrative difficulties.

S 262a. School Finance. Credit two hours. Daily except Sat., 10. *East Roberts 232.* Professor BUTTERWORTH.

Typical problems: how local school funds are levied, collected, and disbursed; cost accounting; budget making; bonding; sources of state funds and their distribution. The discussion will be based upon actual problems; prospective members of the class are urged, therefore, to bring with them financial data regarding their schools.

S 262f. The Unadjusted Child. Credit two hours. Twice daily except Sat., July 25 to August 5. First meeting, M, 8. *Caldwell 143.* Mr. MOSHER.

How can the schools help the rural child who for some reason is not attending at all, or is attending irregularly, or who, if attending regularly, is unable to make progress? A study of the causes of non-attendance and of failure; of the responsibility of the school and of the community; of methods by which these responsibilities may successfully be met through investigation, understanding, and cooperative effort.

A special unit course intended primarily for district superintendents of schools in New York State. Others may be admitted only on the approval of the instructor in charge.

S 263. Procedures and Techniques in Supervision. Credit two hours. Daily except Sat., 11. *GS 221.* Professor MOORE.

Designed for superintendents, supervisors, and principals. Students who have not had experience in these fields will be admitted only upon permission of the in-

structor. A consideration of the nature and purpose of supervision; the improvement of the learning-teaching process; skill in observation; analysis of methods; relationships between general and specific objectives; selection, analysis, and organization of subject matter; measuring and testing results; assisting teachers in professional growth. The experience and needs of the class will determine the emphasis and nature of treatment of these various aspects.

S 266. The Supervision of the Elementary School Subjects. Credit two hours. Daily except Sat., 10. *Stone* 203. Professor MOORE.

A course designed for supervisors, elementary school principals, and superintendents. It includes a consideration of important research studies which have a direct bearing upon the teaching and supervision of the elementary school subjects.

S 267b. The Supervision of Vocational Agriculture in the Secondary School. Open to graduate students in agricultural education. S 263 is suggested as an accompaniment. Credit two hours. Daily except Sat., 11. *Stone* 203. Professor FIELD.

A study of the procedures and techniques utilized in the supervision of agricultural teaching; itinerant teacher education and its relation to general supervision and the professional improvement of teachers.

S 268. The Organization and Administration of Cooperative Extension Work. Credit two hours. Daily except Sat., 11. *Roberts* 292. Mr. HOCHBAUM.

A comparative study of state and county systems within the national system of cooperative extension work in agriculture and home economics, with emphasis on significant features of organization and administrative function.

S 276. Principles of Curriculum Building. Credit two hours. Daily except Sat., 10. *GS* 225. Professor FERRISS.

A consideration of major problems, principles, and techniques in determining educational objectives and curriculum content and organization in elementary and secondary schools.

S 277. The Pupil-Centered High School Curriculum in Agriculture. Open to graduate students in agricultural education. S 276 is recommended as an accompaniment. Credit two hours. Daily except Sat., 8. *Plant Science* 143. Professor FIELD.

An intensive study of the problems of vocational courses organized to utilize and to facilitate the pupil's participation in farming. Special emphasis is put to individualized instruction and its technique.

PRINCIPLES OF EDUCATION

S 2. Principles of Education. Credit two hours. Daily except Sat., 8. *GS* 245. Dr. PALMER.

A study of education from the sociological standpoint: infancy, heredity, and eugenics; the problem of aim; formal discipline; social and personal objectives; the curriculum; the studies and their functions.

S 6. Philosophy of Education. Credit two hours. Intended for graduate students who by study or experience are well advanced in knowledge of education. *M W F*, 2-3:30. *GS* 256. Professor EATON.

An examination of the meaning of education in terms of its larger aims and major values. Every student will be called upon to examine in terms of aims and values some phase of educational practice wherein he has a particular interest and a competent knowledge.

S 28. Educational and Vocational Guidance. Credit two hours. Daily except Sat., 9. *East Roberts* 222. Mr. BRISTOW.

A study of the larger aims and problems of guidance in secondary education; of the present status and trends in the guidance movement; of the guidance agencies and resources and methods of utilizing them; of school organization and curricular adjustments appropriate to the ends of guidance, etc.

S 194. Education and Vocations. Credit two hours. Open to graduate students and to seniors who have had courses in educational psychology, and economics or sociology. Daily except Sat., 10. *Roberts* 292. Professor EATON.

A study of vocational education from the point of view of a democratic theory of education.

S 281. The High School in Rural and Village Communities. Credit two hours. Daily except Sat., 9. *Stone* 102. Professor FERRISS.

A course dealing with basic problems of modern secondary education in its adaptation to rural and village conditions. Among the topics considered are: the scope and functions of secondary education; types of secondary-school organization and their adaptation to rural and village conditions and needs; program of studies and curriculum organization and content; pupil guidance, extra-class activities, needed forms of extension work, etc.

S 296. The Progressive School Movement. Credit two hours. Daily except Sat., 11. *Stone* 102. Dr. THAYER.

A brief survey of the influences—social, political, economic, and psychological—that have given character to subject matter and teaching methods in the American public school, followed by a critical and constructive appraisal of contemporary tendencies in the progressive school of today.

Open only to administrative and supervisory officers and to teachers with at least two years of experience.

SUMMER SCHOOL OF BIOLOGY

Under the auspices of the New York State Summer Session at Cornell University and the Summer Session of Cornell University.

The tuition fee in the Summer School of Biology, regardless of the number of courses taken, is sixty dollars.

STAFF OF INSTRUCTION

| | |
|---|-----------------------------------|
| HOWARD BERNHARDT ADELMANN, Ph.D. | Histology and Embryology |
| (Assistant Professor of Histology and Embryology) | |
| OTIS FREEMAN CURTIS, Ph.D. | Plant Physiology |
| (Professor of Botany) | |
| ARTHUR JOHNSON EAMES, Ph.D. | Plant Anatomy and Morphology |
| (Professor of Botany) | |
| HARRY MORTON FITZPATRICK, Ph.D. | Mycology |
| (Professor of Mycology) | |
| ALLAN CAMERON FRASER, Ph.D. | Plant Breeding and Genetics |
| (Assistant Professor of Plant Breeding) | |
| WILLIAM ARTHUR HAGAN, D.V.M. | Pathology and Bacteriology |
| (Professor of Pathology and Bacteriology) | |
| GEMMA JACKSON, Ph.D. | Botany |
| (Instructor in Botany) | |
| ROBERT MATHESON, Ph.D. | Entomology |
| (Professor of Entomology) | |
| LOREN CLIFFORD PETRY, Ph.D. | Paleobotany and Elementary Botany |
| (Professor of Botany) | |
| HUGH DANIEL REED, Ph.D. | General Zoology and Morphology |
| (Professor of Zoology) | |
| THEODORE SNOOK, M.A. | Histology |
| (Instructor in Histology) | |
| DONALD STUART WELCH, Ph.D. | Plant Pathology |
| (Assistant Professor of Plant Pathology) | |
| KARL MCKAY WIEGAND, Ph.D. | Plant Taxonomy |
| (Professor of Botany) | |
| ALBERT HAZEN WRIGHT, Ph.D. | Systematic Zoology |
| (Professor of Zoology) | |
| BENJAMIN PERCY YOUNG, Ph.D. | Invertebrate Zoology |
| (Assistant Professor of Zoology) | |

Sixth International Congress of Genetics.—Attention is called to the unusual opportunity which students of the Summer School of Biology will have to attend this international congress to be held in Ithaca from August 24 to 31, 1932. There will be many special papers, symposia, and group discussions by world leaders in various fields, and extensive exhibits of both theoretical and applied work. Further information may be obtained from the Department of Plant Breeding, Cornell University.

GENERAL PLANS AND AIMS

The Summer School of Biology was organized to provide instruction of the highest grade in zoology, botany, and allied subjects. All the regular facilities of the University are at the disposal of the student, and as far as possible the staff has been restricted to teachers of professorial rank in the University. The courses are for the most part those given during the regular academic year condensed into a period of six weeks, but not abridged. The work is particularly

planned to meet the needs of teachers and graduate students who wish to know, in addition to the subject matter, something of the methods and sources in teaching; but undergraduates also, if sufficiently prepared, will find the courses adapted to their needs. Intensive rather than extensive work is necessarily expected of each student, as the courses are comprehensive. These courses lead toward advanced degrees, and special attention is given to graduate students pursuing research. Students interested in graduate study should, if possible, consult by letter with Professor K. M. Wiegand, representing the School of Biology, or with the professor concerned, before coming to Ithaca.

The intensive interest in Biology at Cornell University over a period of years has resulted in a wealth of laboratory material. Very extensive and in some cases unique collections of both plants and animals, and a very complete working library, are available to students prepared to make use of them. Ithaca is located in the Finger Lakes region of Central New York, noted not only for its picturesque beauty, but for its richness in biological material of both plants and animals. In this respect the University is perhaps not excelled by any other institution in the country. The collecting grounds are for the most part adjacent to the campus, and can be very readily visited. Within easy reach of the laboratories are fresh-water marshes and lakes, salt springs, marl springs, marl bogs, peat bogs, extensive ravines with numerous waterfalls, and upland woods or fields overlying either calcareous or noncalcareous sandy or heavy soils. The country shows a considerable variation in elevation, thus giving samples of several life zones. It is therefore possible to use as illustrative material those inland organisms which may be obtained most readily by teachers throughout the country for use in their own classes.

[A limited amount of change in the hours scheduled may be made by the staff at the beginning of the session to avoid conflicts. In the case of morning laboratories the student may obtain permission, at the option of the instructor, to be absent for a period to attend a lecture in some other course. The time so lost is to be made up later.]

COURSES DEALING PRIMARILY WITH PLANTS

S 1. General Botany. Credit six hours. Equivalent to Botany 1. Lectures, M T W Th F, 8-9:30. Laboratory, M T W Th F, 9:30-12:30. One recitation and conference period each week, at an afternoon hour to be arranged. One afternoon field trip each week. The afternoons should be reserved for the recitations and field trips. By permission, students may be absent from the laboratory period for one hour to attend another course, making up the work in the afternoons. *Plant Science* 141, 262. Professor PETRY and Dr. JACKSON.

A survey of the fundamental facts and principles of plant life. The structures and life processes of higher plants are examined in some detail, with considerable attention to information necessary for more advanced or practical work with plants. Representatives of the principal groups of plants are then studied, with a view to acquainting the student with the plant kingdom as a whole. The principal families of flowering plants are examined and practice in identification is given.

The field work is intended to afford to teachers and others first-hand knowledge of the commoner plants of all the great groups. Facilities for collecting plant materials for teaching or other purposes will be provided. Laboratory fee, \$7.

S 2. Plant Physiology. Credit four hours. Equivalent to Botany 31. Prerequisite course S 1 or its equivalent, chemistry, and permission to register. Lectures, M T W Th F, 12. *Plant Science* 141. Laboratory, T W Th F, 9-12. *Plant Science* 227. Professor O. F. CURTIS.

This course is designed to acquaint the student with the important life processes of plants. Topics such as water-relations, photosynthesis, translocation, digestion, respiration, mineral nutrition, and growth relations are studied in some detail and particular emphasis is placed both in laboratory and in classroom on discussion of the principles and their applications to growing plants. Laboratory fee, \$4; deposit, \$2.

S 3. Taxonomy of Vascular Plants. Credit four hours. Equivalent to Botany 117. Prerequisite course S 1 or its equivalent. Lectures, M T W Th, 2. Laboratory, M T W Th, 3-6, F, 2-5. Several all-day field trips will be arranged. *Plant Science* 211. Professor WIEGAND.

A study of the kinds of seed plants and ferns; their classification into genera, families, and orders; and field work on the local flora. Emphasis will be placed on wild plants, but the more common cultivated plants will have some attention. The course is planned to follow course S 1 and to furnish an introduction to the knowledge of field botany and to the classification of the higher plants, in preparation for special work in various departments and as an aid in teaching. Instruction will be given in herbarium methods. Laboratory fee, \$4; deposit, \$5.

S 4. Comparative Morphology of Fungi. Credit four hours. Equivalent to Plant Pathology 121. Prerequisite course S 1 or its equivalent and permission to register. Lectures, M W F, 9. *Plant Science* 333. Laboratory, fifteen actual hours a week, by arrangement. *Plant Science* 333. Professor FITZPATRICK.

An elementary synoptical course designed to acquaint the student with the general field of mycology. Emphasis is placed on morphology and phylogeny, rather than on taxonomy, but abundant opportunity is given for field work. Laboratory fee, \$6; deposit, \$3.

S 7. Mycology. Credit four hours. Prerequisite courses S 1 and S 4 or their equivalent and permission to register. Lectures or conferences, T Th, by arrangement. Laboratory, fifteen actual hours a week, by arrangement. *Plant Science* 333. Professor FITZPATRICK.

An advanced course designed for students who wish to specialize in mycology or plant pathology. An intensive study of the morphology, taxonomy, cytology, and phylogeny of the fungi. Emphasis is placed on field work, with extensive practice in determination of material.

The groups of the fungi are studied in successive summers in the following order, (1) Phycomycetes, (2) Ascomycetes, (3) Basidiomycetes, (4) Uredinales, Ustilaginales, Fungi Imperfecti, and Myxomycetes. By repeating the course, the student may obtain in four summers the equivalent of Plant Pathology 221 and Plant Pathology 222. He may begin with any one of the four groups, and need not take them in unbroken sequence. In the 1932 Summer Session group (1) Phycomycetes will be given. Laboratory fee, \$6; deposit, \$3.

S 5. Plant Anatomy. Credit four hours. Prerequisite course S 1 or an equivalent and permission to register. Laboratory, M T Th F, 8-11:30. Hours for lectures to be arranged within these periods. *Plant Science* 228. Professor EAMES.

A course in the descriptive anatomy of vascular plants with emphasis on practice in interpretation and determination of material. Laboratory fee, \$5.

[S 8. Morphology of Vascular Plants.] Not given in 1932.

S 10. General Plant Pathology. Credit four hours. Equivalent to Plant Pathology 1. Prerequisite Botany S 1 or its equivalent and permission to register. Lectures, M W F, 2. *Plant Science* 336. Laboratory, the completion of a minimum of twenty exercises requiring not less than twenty actual hours a week, with personal conferences upon each. Conferences by arrangement. Laboratory at the student's convenience. Assistant Professor WELCH.

A fundamental course treating of the nature, cause, and control of plant diseases illustrated by studies of the commoner diseases of cultivated crops. Laboratory fee, \$4.50; deposit, \$3.

S 19. Special Problems with Plants. Credit two or more hours. Hours to be arranged. In registering for this course the name of the professor with whom the work is to be taken must be stated.

Students sufficiently prepared may arrange for the study of some problem or special topic. Such work may lie in the fields of general or taxonomic botany, anatomy, comparative morphology, mycology, cytology, plant physiology, paleobotany, plant pathology, or genetics. A member of the staff must supervise the work.

COURSES DEALING PRIMARILY WITH ANIMALS

S 20. General Zoology. Credit six hours. Lectures, M T W Th F, 9. *McGraw 5*. Laboratory, M T W Th F, 1:40-4:30. *McGraw 2 A*. Field studies and original problems to be arranged. Professor REED.

A comprehensive view of Animal Biology including the principles of structural and physiological organization, the cell as the basis of metabolism, reproduction, and heredity, the organismal concept of the individual, the progress of perfection of animal types, the biological nature and zoological position of man, and interpretations of modern zoological theory. Laboratory fee, \$5.

S 21. Systematic Vertebrate Zoology and Ecology. Credit four hours. Lectures, M T W Th, 1:40-2:30. Laboratory and field work, M T W Th F, 2:30-5:30. *McGraw*. Several all-day trips are required. Occasionally a field trip, 5:30-8 A. M. or 5-8 P. M., may be substituted for the regular periods. Professor WRIGHT.

Lectures on fishes, amphibians, reptiles, birds, and mammals; their habits, life-histories, coloration, respiration, locomotion, reproduction, and adaptations; together with their classification, nomenclature, characters, and relationships. Laboratory study of the parts employed in the classification of these groups, with training in the identification of two hundred and forty North American species. Field work is partly to give practice in field observations and in ready identification of local vertebrates in their natural environment, and partly to introduce some ecological methods. Textbook: Jordan's *Manual of Vertebrates of the Northeastern United States*, new edition. Laboratory fee, \$4.

S 22. Invertebrate Zoology. Credit four hours. Prerequisite Zoology S 20 or an equivalent and permission to register. Daily except Sat., 9-12:30. *McGraw*. Lectures, field trips, laboratory work, and discussions will be arranged during these periods. Assistant Professor YOUNG.

This course should provide a better foundation for the advanced student in the field of zoology or give to the teacher a knowledge of a larger variety of forms available for use in general courses either in high schools or in colleges. It differs from the type of invertebrate course offered by marine biological laboratories in that stress is laid upon many species which may be secured in the living state away from the shore. Methods used in collecting and the study of habitats are the more important objectives of the field trips. Classification, structure, and life cycles are emphasized in the laboratory. Laboratory fee, \$3.

S 23. Comparative Anatomy of Vertebrates. Credit four hours. Lectures, daily except Sat., 8. *McGraw 5*. Laboratory, fifteen hours a week at times to be arranged. Professor REED and ———.

A thorough dissection and study of the several systems of organs in a selected series of vertebrate types. The various systems are considered with reference to their significance in progressive modifications and their bearing upon vertebrate descent. The lectures deal with the problems of comparative anatomy. This course is the equivalent of Animal Biology II given during the academic year. Laboratory fee, \$6.

S 26. Histology. The tissues and their histogenesis. Credit four hours. No prerequisite, but previous work in biology, zoology, and botany or physiology is recommended. Lectures, M T W Th F, 12. The laboratory will be open every morning except Saturday. *Stimson*. Assistant Professor ADELMANN and Mr. SNOOK.

For students of biology or those preparing for medicine. The cell and cellular origin of the body; the structure and development of its component tissues. Each student will prepare or receive a series of typical microscopic preparations.

The courses in histology and embryology are given in the histological laboratories in *Stimson Hall*. The department is well equipped for instruction in both subjects, having a large and adequate supply of modern microscopical instruments and an extensive collection of demonstration material for both histology and embryology. Microscopes are furnished by the department. Consultation with the instructors previous to registration is advised. Laboratory fee, \$6.

S 27. Embryology of Vertebrates. Credit four hours. Prerequisite a course in the histology of the tissues or a satisfactory equivalent in other biological work involving training in the use of the microscope. Lectures, M T W Th F, 9. The laboratory will be open every morning except Saturday. *Stimson*. Assistant Professor ADELMANN and Mr. SNOOK.

For students of biology or those preparing for medicine. Preparation and study of embryological specimens from all the chief groups of vertebrates. Particular emphasis is placed on the embryology of the chick. The student also acquires a knowledge of special methods useful in embryological work. Laboratory fee, \$6.

S 30. General Entomology. Credit three hours. Equivalent to Animal Biology 3 or Entomology 12. Prerequisite Biology 1 or Zoology 1 or its equivalent. Lectures, M T W Th F, 10. *Roberts* 392. Practical exercises, M W F, 1:40-4. *Bailey, West Basement*. Professor MATHESON.

This course includes lectures and demonstrations on the characteristics of the orders and families of insects, with a study of their habits, life-histories, and relations to other animals and to plants. The laboratory work consists of the study of the structure, ecology, metamorphosis, and classification of insects. Field trips to study insects in their natural habitats are an important feature. Each student is required to collect and prepare a typical collection of insects. Opportunities are given for the rearing of insects in the Insectary, and special work is offered to suit the needs of individual students. Textbook: Comstock's *Manual for the Study of Insects* (1930 edition). Equipment: a good hand lens, several insect cases, insect pins, and labels. These can all be purchased in Ithaca. Laboratory fee, \$2.50.

[S 31. **Elementary Morphology of Insects.** Credit three hours. Equivalent to Entomology 21.] Not given in 1932.

[S 32. **Elementary Systematic Entomology.**] Credit two hours. Equivalent to Entomology 15 and 31a. Prerequisite course S 31.] Not given in 1932.

Courses S 31 and S 32 are required of all students who plan to take advanced work in Entomology.

[S 34. **Advanced Morphology, Histology, and Embryology of Insects.** Credit one hour. Prerequisite courses S 31 and S 30 or S 32 or equivalent.] Not given in 1932.

[S 35. **Histology of Insects.** Credit two hours. Must be preceded or accompanied by course S 31.] Not given in 1932.

S 39. Special Problems with Animals. Credit two hours or more. Hours to be arranged. In registering for this course the name of the professor with whom the work is to be taken must be stated.

Students sufficiently prepared may arrange for the study of some problem or special topic. Such work may lie in the fields of general zoology, invertebrate zoology, systematic vertebrate zoology, comparative anatomy of vertebrates, ornithology, histology, embryology, general entomology, systematic entomology, economic entomology, or general biology. A member of the staff must supervise the work.

GENERAL COURSES DEALING WITH BOTH PLANTS AND ANIMALS

S 40. Genetics. Credit four hours. Prerequisite elementary botany and plant physiology, or elementary zoology and animal physiology, and permission to register. Courses in cytology and in taxonomic botany or zoology will be found helpful. Lectures, M T W Th F, 8. Laboratory, M W F, 1:40-4. Conferences to be arranged. *Plant Science* 146. Assistant Professor FRASER.

A general introductory course designed to acquaint the student with the fundamental principles of heredity and variation. Special attention is given to the Mendelian interpretation of the facts of inheritance. Among the topics to be discussed are: the physical basis of heredity; determination of sex; factor linkage; measurement of variation; quantitative inheritance; pure lines; inbreeding and cross-breeding; cytoplasmic inheritance; and mutation; with suggestions as to the relation of genetical principles to eugenics. Laboratory studies of variation and of the laws of heredity as illustrated by hybrid material in plants and by breeding experiments with the fruit fly, *Drosophila*. Laboratory fee, \$3.

[S 6. **Cytology.** Credit three hours. Prerequisite course S 1 or course S 20 or their equivalent and permission to register.] Not given in 1932.

S 42. General Bacteriology. Credit four hours. Prerequisite some work in inorganic chemistry and in microscopy. Lectures, M T W Th F, 9. Laboratory, M T W Th F, 10-1. *Veterinary College*. Professor HAGAN.

A general introductory course in bacteriology covering the distribution, morphology, biology, and methods of study of micro-organisms. The latter half of this course is concerned with the bacteriology of water, sewage, milk, and milk products, the fermentation industries, and of some of the more important human and animal diseases. The laboratory work is closely correlated with the subject matter of the lectures. After a number of sessions devoted to the development of technique, there follows work on the bacteria of air, water, milk, fermentation processes, and disease. Laboratory fee, \$10.

NEW YORK STATE SUMMER SESSION

AT

CORNELL UNIVERSITY

OFFICERS

LIVINGSTON FARRAND, A.B., M.D., L.H.D., LL.D., President of the University.
ALBERT RUSSELL MANN, B.S., A.M., D.Sc., D.Agr., Provost of the University.
ROLLAND MACLAREN STEWART, A.B., Ph.D., Director of the New York State Summer Session and Professor of Rural Education.

CORNELIUS BETTEN, Ph.D., D.Sc., Acting Dean of the Colleges of Agriculture and Home Economics and Director of Resident Instruction.

MARTHA VAN RENSSELAER, A.B., D.Ped., Director of the College of Home Economics.

FLORA ROSE, B.S., M.A., D.Ped., Director of the College of Home Economics.
OLIN WHITNEY SMITH, B.S., Secretary of the Colleges of Agriculture and Home Economics.

ELLEN FITCHEN, A.B., Secretary in the College of Home Economics.

STAFF OF INSTRUCTION

(The names of the instructors in the College of Agriculture are printed on page 69; those of the instructors in the College of Home Economics, on page 83; those of the instructors in the Summer School of Biology, on page 60.)

COURSES OF INSTRUCTION

Courses of instruction are offered in the New York State Summer Session under the auspices of the New York State College of Agriculture and of the New York State College of Home Economics. These courses are designed primarily to meet the needs of persons engaged in the various forms of educational work concerned with agriculture, home economics, science, and other subjects of study particularly related to the problems of rural life. Teachers, supervisors of instruction, superintendents or principals of schools, extension workers, parents, dietitians, students interested in the study of farm and home practices, camp directors, and others responsible for the improvement of rural workers have primary consideration in the program of courses.

ADMISSION

Admission to classes is limited to regularly registered students. No examinations are required for entrance, but the candidate for admission must show that he is qualified to pursue the work offered. He must register for all courses that he expects to attend whether or not he wishes credit. He must register for a minimum of four hours unless he has special permission of his adviser and the approval of the Director. Advice for registration is given through regular advisers who are members of the Summer Session staff, and who approve the registration cards. See page 68 for the directions about registration.

The graduate student should consult the representative of his major subject if he is matriculating for a regular degree; or the Director of the Graduate School of Education if for the Master's degree in Education; or an adviser selected by the student from the members representing his field of work if he is not a candidate for a degree. See page 6 of the 1931-32 *Announcement of the Graduate School*. Note the University regulation concerning vaccination on page 7 of the same announcement.

TUITION AND FEES

Tuition in the New York State Summer Session is free to students who are residents of New York and who have been residents for at least one year immediately preceding registration, except those registered in the Summer School of Biology, the Summer Courses in Hotel Administration, and the Graduate School. (See pages 14 to 16 for full announcement of tuition and fees.) An incidental fee of ten dollars is, however, charged to all students resident of New York unless registered in the Graduate School.

Persons coming from outside the state of New York, whether they take one course or more, will pay sixty dollars, except persons registered for special unit courses, see page 82, who will pay at the rate of ten dollars a week, and graduate students who pay on the Graduate School rate. See page 15.

Graduate students, if they have not previously matriculated in Cornell University, must pay also a matriculation fee of ten dollars. See page 15.

Candidates for advanced degrees who are registered for study under Personal Direction during the intersemester periods are required to pay an administration fee of \$6.25. Such students in the Graduate School as are not exempt from summer course tuition fees, may be permitted to take one or more subjects in any of such courses upon the payment of the regular tuition fees. See page 14 for a complete statement.

In certain courses laboratory fees are charged and in others charges are made for materials used. These are indicated in the description of the courses.

A fee of three dollars (one dollar for students in special unit courses) is charged for the privileges of Willard Straight Hall. See page 21.

ACADEMIC CREDIT

A student who has previously satisfied the entrance requirements for the College in which he wishes credit may obtain credit for work in the New York State Summer Session up to a limit of eight semester hours. Rarely, however, should students plan to register for more than six semester hours. Students are not permitted to visit classes but may register for courses which they desire to attend without credit, if the instructor is willing. Residence credit is given if six hours are passed, but not more than a total of two semesters of residence may be obtained by attendance at summer sessions.

DIRECTIONS FOR REGISTRATION

Candidates for degrees should consult the announcements of the respective colleges, since much of the work required for degrees, if offered in the Summer Session at all, is distributed over a period of years. For the requirements for the degree of Bachelor of Science (eight semesters, 122 hours, etc.) see the announcements of the New York State College of Agriculture and the New York State College of Home Economics. For advanced degrees see the *Announcement of the Graduate School*.

TEACHERS' CERTIFICATES

The New York State Department of Education through its Teacher Training Division is responsible for the certification of teachers. The courses offered during the summer enable students to meet these requirements. For information on certificates for work done, see page 12.

The Summer School of Biology and the Graduate School of Education are special groupings and organizations of courses. The courses in Biology are described on pages 60 to 65, and in Education on pages 50 to 59. For other information of a general character, see pages 13 to 21.

DIRECTIONS FOR REGISTRATION

Students should observe the following directions to simplify registration and avoid confusion:

1. Note on page 3 that Monday, July 11, is Registration Day. The student should plan to register on that day if possible.
2. Go directly to the office of the Secretary in Roberts Hall and secure a study card.
3. Take this card to a staff adviser in Roberts Assembly, who will assist in the selection of courses and give further direction if needed.
4. When the selection is completed and the schedule is approved return the card to the Secretary's office for official approval.
5. Pay tuition and fees at the office of the Treasurer, Morrill Hall.

SUMMER SCHOOL OF AGRICULTURE

in the

NEW YORK STATE COLLEGE OF AGRICULTURE

STAFF OF INSTRUCTION

| | |
|--|--|
| ARTHUR AUGUSTUS ALLEN, Ph.D. | Ornithology |
| (Professor of Ornithology) | |
| ELSA GUERDRUM ALLEN, Ph.D. | Ornithology |
| (Instructor in Ornithology) | |
| WALFRED ALBIN ANDERSON, Ph.D. | Rural Social Organization |
| (Assistant Professor of Rural Social Organization) | |
| THOMAS LEVINGSTON BAYNE, jr., Ph.D. | Rural Education |
| (Assistant Professor of Rural Education) | |
| HOWARD WAYLAND BEERS, M.S. | Rural Social Organization |
| (Instructor in Rural Social Organization) | |
| MURIEL BRASIE, M.A. | Rural Education |
| (Assistant Professor of Home Economics) | |
| WILLIAM H. BRISTOW, M.A. | Rural Education |
| (Deputy Superintendent Pennsylvania State Department of Public Instruction) | |
| FRANK PORES BUSSELL, Ph.D. | Plant Breeding |
| (Professor of Plant Breeding) | |
| JULIAN EDWARD BUTTERWORTH, Ph.D. | Rural Education |
| (Professor of Rural Education and Director of the Graduate School of Education) | |
| PETER WALTER CLAASSEN, Ph.D. | Biology |
| (Professor of Biology) | |
| CHARLES W. CLARK, M.A. | Rural Education |
| (Director of Vocational Schools, Schenectady, New York) | |
| JAMES E. CROUCH, M.S. | Ornithology |
| (Assistant in Ornithology) | |
| RALPH WRIGHT CURTIS, M.S.A. | Floriculture and Ornamental Horticulture |
| (Professor of Ornamental Horticulture) | |
| THEODORE HILDRETH EATON, Ph.D. | Rural Education |
| (Professor of Rural Education) | |
| FRANK LATTI FAIRBANKS, M.E. | Agricultural Engineering |
| (Assistant Professor of Agricultural Engineering) | |
| EMERY N. FERRISS, Ph.D. | Rural Education |
| (Professor of Rural Education) | |
| ALBERT MARTIN FIELD, Ph.D. | Rural Education |
| (Professor of Agricultural Education, University of Minnesota) | |
| CHARLES E. FINCH, B.S. | Rural Education |
| (Director of Junior High School Grades, Rochester, New York) | |
| ARTHUR KENDALL GETMAN. | Rural Education |
| (Chief, Agricultural Education Bureau, State Department of Education) | |
| EVA L. GORDON, M.S. | Rural Education |
| (Assistant in Nature Study) | |
| GILBERT DENNISON HARRIS, Ph.B. | Rural Education |
| (Professor of Paleontology and Stratigraphic Geology) | |
| ARTHUR JOHN HEINICKE, Ph.D. | Pomology |
| (Professor of Pomology) | |
| HANS WELLER HOCHBAUM, B.S.A. | Rural Education |
| (Field Agent, Cooperative Extension Work, United States Department of Agriculture) | |
| EDWIN RAYMOND HOSKINS, M.S.A. | Rural Education |
| (Instructor in Rural Education) | |
| RALPH SHELDON HOSMER, M.F. | Forestry |
| (Professor of Forestry and Head of the Department of Forestry) | |

- CHESTER JERMAIN HUNN, B.S.A. Floriculture and Ornamental Horticulture
(Assistant Professor of Ornamental Horticulture)
- ELIZABETH CAROLINE JACOBSON, M.A. Rural Education
(Instructor in Rural Education)
- PETER PAUL KELLOGG, B.S. Rural Education
(Instructor in Rural Education)
- MYRON SLADE KENDRICK, Ph.D. Agricultural Economics and Farm Management
(Assistant Professor of Rural Economy)
- PAUL J. KRUSE, Ph.D. Rural Education
(Professor of Rural Education)
- FRANK EUGENE LUTZ, Ph.D. Rural Education
(Associate Curator and Curator of Entomology, American Museum of Natural History, New York City)
- LUA ALICE MINNS, M.S.A. Floriculture and Ornamental Horticulture
(Instructor in Floriculture)
- CLYDE B. MOORE, Ph.D. Rural Education
(Professor of Rural Education)
- RICHARD ALAN MORDOFF, Ph.D. Meteorology
(Professor of Meteorology)
- CHARLES L. MOSHER, Ph.M. Rural Education
(Director of Attendance, New York State Department of Education)
- WALTER CONRAD MUENSCHER, Ph.D. Botany
(Assistant Professor of Economic Botany)
- WILLIAM IRVING MYERS, Ph.D. Agricultural Economics and Farm Management
(Professor of Farm Finance)
- JAMES GEORGE NEEDHAM, Ph.D., Litt.D., D.Sc. Rural Education
(Professor of Entomology and Limnology)
- E. LAURENCE PALMER, Ph.D. Rural Education
(Professor of Rural Education)
- JAMES BECKLEY PALMER, Ph.D. Rural Education
(Director, Department of Rural Education, State Normal School, Potsdam, New York)
- GEORGE ERIC PEABODY, M.S. Extension Teaching
(Assistant Professor of Extension Teaching)
- ROBERT ARNOLD POLSON, M.S. Rural Social Organization
(Instructor in Rural Social Organization)
- JOSEPH PULLMAN PORTER, M.S.A., M.L.D., Floriculture and Ornamental Horticulture
(Assistant Professor of Ornamental Horticulture)
- MYERS PETER RASMUSSEN, Ph.D., Agricultural Economics and Farm Management
(Professor of Marketing)
- JAMES EDWARD RICE, B.S.A. Poultry
(Professor of Poultry Husbandry and Head of the Department of Poultry Husbandry)
- LOUIS MICHAEL ROEHL, B.S. Agricultural Engineering
(Assistant Professor of Agricultural Engineering, in Charge of Farm Shop)
- DWIGHT SANDERSON, Ph.D. Rural Social Organization
(Professor of Rural Social Organization and Head of the Department of Rural Social Organization)
- CHARLES F. SARLE, Ph.D. Agricultural Economics and Farm Management
(Senior Economist, Economic Division, Federal Farm Board)
- JAMES MORGAN SHERMAN, Ph.D. Dairy Industry
(Professor of Dairy Industry and Head of the Department of Dairy Industry)
- CLIFFORD NICKS STARK, Ph.D. Dairy Industry
(Assistant Professor of Bacteriology)
- ROLLAND MACLAREN STEWART, Ph.D. Rural Education
(Professor of Rural Education and Director of the New York State Summer Session)

| | |
|----------------------------|---|
| VIVIAN T. THAYER, Ph.D. | Rural Education (Educational Director, Ethical Culture Schools, New York City) |
| KARL MCKAY WIEGAND | Plant Taxonomy (Professor of Botany and Head of the Department of Botany) |
| GEORGE M. WILEY, Ph.D. | Rural Education (Assistant Commissioner of Education, New York State Department of Education) |
| ANDREW LEON WINSOR, Ph.D. | Rural Education (Assistant Professor of Rural Education) |
| LAURENCE C. WOODRUFF, M.A. | Biology (Assistant in Biology) |
| PAUL WORK, Ph.D. | Vegetable Crops (Professor of Vegetable Crops) |
| ALBERT HAZEN WRIGHT, Ph.D. | Rural Education (Professor of Zoology) |
| FOREST BLYTHE WRIGHT, M.S. | Agricultural Engineering (Instructor in Agricultural Engineering) |

AGRICULTURAL ECONOMICS AND FARM MANAGEMENT

S 102. Farm Management. Credit three hours. Lectures, daily except S, 8. *East Roberts* 222. Laboratory, T, 1:40-4, S, all day. *Farm Management* 102. Professor MYERS.

It is desirable that this course be preceded by courses dealing with the production of crops and animals or that the student have considerable farm experience in crop and animal production.

Lectures, recitations, laboratory practice, and field trips. Farming as a business; types of farming; size of business; balance of business; rates of production; farm layout; building arrangement; machinery; buying and selling; ways of starting to farm; forms of tenure and leases; choosing and buying a farm; use of capital and credit; planning, organization, and management of specific farms. Field trips to farms near by will be made on Saturdays. Trips begin at 8 a. m. One two-day trip will probably be arranged. Laboratory fee, \$2.

By special arrangement, the student registered for special-unit courses may take a two-weeks' course for which he will receive one hour's credit.

S 111. Agricultural Statistics. Credit two hours. Lectures, daily except S, 9. *Plant Science* 143. Laboratory, M Th, 1:40-4. *Farm Management* 102. Dr. SARLE.

Appraisal of economic statistical data; tests for representativeness and reliability; measurement of statistical relationships, including classification of data and correlation; and analysis of time series. Fee for materials, \$3.

S 115. Agricultural Prices. Credit two hours. Lectures, daily except S, 11. *Plant Science* 141. Dr. SARLE. Economic and statistical analysis of factors affecting farm prices.

S 142. Marketing (Fruits and Vegetables.) Credit three hours. Lectures daily except S, 11. *East Roberts* 232. Laboratory, W F, 1:40-4. *East Roberts* 232. Professor RASMUSSEN.

A study of the economic factors involved in the marketing of fruits and vegetables: regional and seasonal competition; areas of distribution; methods of handling; costs of marketing; types of marketing organizations; sales methods; transportation and carrier services; produce law and methods of credit rating; terminal problems. Fee for materials furnished, \$2.

S 142a. Marketing (Fruits and Vegetables.) Special unit course, daily except S, 9. Laboratory, T Th, 1:40-4. *East Roberts* 223. Professor RASMUSSEN.

S 168. Special Lectures on Economic and Educational Problems. Credit one or two hours. Lectures, M W F, 12. Discussion period, M W F, 4. *East Roberts* 222. Credit one hour for those who take the 12 o'clock lecture only; two hours for those who take both periods. Department of Rural Education cooperating. Professor RASMUSSEN in charge.

A series of discussions by non-resident lecturers of certain economic and educational problems related to agriculture.

S 250. **Taxation.** Credit two hours. Daily except S, 10. *Plant Science* 141. Assistant Professor KENDRICK.

The emphasis of the course is on state and local problems connected with rural taxation. Among the subjects considered are: the growth of expenditures; the rise of modern tax problems; how various governmental divisions in New York and other states get their tax revenues; the general-property tax and its administration, and the special cases of personal-property, farm, and forest taxation; income, inheritance, and gasoline taxes; problem of proper distribution of the tax burden among the various state and local governmental units. Fee for materials furnished, \$2.

S 251. **Economics of Enterprise.** Credit two hours. Daily except S, 8. *East Roberts* 232. Assistant Professor KENDRICK.

A course in systematic economic theory with emphasis on price economy. Open to graduate students. Others admitted by permission of the instructor.

AGRICULTURAL ENGINEERING

S 40a. **Farm Shop.** Credit two hours. T Th, 1:40-4, and S, 8-1. *Agricultural Engineering Laboratory.* Assistant Professor ROEHL.

A course for teachers of agriculture in farm carpentry and such correlated drawing as farmers may find helpful in construction and repair work; selection and care of farm shop tools; study of the steel square; tool grinding, saw filing, fitting handles, window repairing; painting and refinishing. Special consideration is given to preparing men to teach this work as a part of the vocational course in agriculture. Laboratory fee, \$3.

Students for whose programs the hours given above present conflicts, should see the instructor.

S 40b. **Farm Shop.** Credit two hours. M F, 1:40-4 and S, 8-1. *Agricultural Engineering Laboratory.* Assistant Professor ROEHL.

A course for teachers of agriculture in farm shop work including the following: harness repairing, rope work, soldering, belt lacing, cold metal working, farm blacksmithing. Special attention is given to the selection of jobs, to the best methods of doing these jobs, and to degrees of skill which should be attained in the performance of them. Students will be expected to demonstrate the performance of one such job. Consideration is given to the tool equipment necessary to meet the repair and construction problems arising on various kinds and sizes of farms. The farm blacksmithing work is confined mainly to such forge work as will aid in the repairing of farm machinery and in the shaping and tempering of cold chisels, punches, picks, harrow teeth, etc. Laboratory fee, \$3.

S 40c. **Farm Shop.** Credit three hours for three special units of two weeks each. Units may be taken separately for one hour of credit each. T Th, 9-12 and any other three hours, F S, 9-12. *Agricultural Engineering Laboratory.* Assistant Professors ROEHL and FAIRBANKS and Mr. WRIGHT.

These courses are designed primarily for men who are teaching the work as part of the shop courses in high schools, or who are conducting extension work. The preparation of job sheets will be a part of the instruction.

Unit 1. July 11 to 22. Electricity and its application to the home and the farm. Mr. WRIGHT.

This unit includes a study of elementary electricity, dry cell and storage batteries, lighting and power circuits, switching circuits, wiring materials, electrical equipment and appliances for the home and farm, and practice in wiring a building.

Unit 2. July 25 to August 5. Plumbing and its application to the home and the farm. Mr. WRIGHT.

A study of plumbing systems, plumbing materials, including fixtures, pipe, fittings, etc.; practice to give skill in plumbing operations; a study of the various types of domestic water systems. It is planned to have the class build a concrete septic tank.

Unit 3. August 8 to 19. Repairing farm field machinery. Assistant Professors ROEHL and FAIRBANKS.

A course dealing primarily with the repair of farm field machinery. This includes housing, care, and problems in the operation of machines. This course is intended primarily to aid teachers of repairing in the farm shop course in high schools. The machines studied are those which can be repaired by high-school boys with such equipment as can be advocated for the farm and high school shops. The mowing machine, corn planter, disk harrow, and grain binder are among the machines which will be used.

S 41. General Shop Work for Rural High-School Teachers. Credit three hours. M W, 9-12 and any other three hours T, Th, or F, 9-12. *Agricultural Engineering Laboratory.* Assistant Professor ROEHL and Mr. WRIGHT.

A course in training for teaching general industrial arts work in rural high schools. Practical jobs to develop skill in woodwork, drawing, soldering, electricity, plumbing, fitting tools, painting and glazing, concrete work, furniture refinishing, automobile care and repair, as suited to the needs of the youth of a community. Laboratory fee, \$3.

Courses in the organization and methods of teaching industrial arts, including the making of curricula and in the principles of vocational industrial arts, are offered in the Department of Rural Education. See S 142 a, S 142 b, and S 142 c.

S 102a. Farm Power Machinery. Credit one hour. Lectures and laboratory, M W F, 2-5. August 8 to 19. *Agricultural Engineering Laboratory.* Assistant Professor FAIRBANKS.

A special unit course for teachers of agriculture, county agents, and others in the theory of the internal combustion engine and its application to farm machinery. The single cylinder gas engine, the automobile, the automobile truck, and the farm tractor are all farm-power machines. These machines are to be studied in the laboratory and in the field so that a thorough understanding of the functioning, the care, and the adjustment of each machine will be attained. The making of job sheets in the operation, care, and repair of power machines will be included in the course.

BACTERIOLOGY

S 1. General Bacteriology. Credit two or four hours. Lectures, daily except S, 1:40. Laboratory, daily except S, 2:30-4:30. *Dairy 119.* Professor SHERMAN and Assistant Professor STARK.

An introductory course giving a general survey of the field of bacteriology, together with the fundamentals essential to further work in the subject. The morphology, physiology, and classification of bacteria; the culture of microorganisms, simple and differential staining, and general bacteriological technique; the bacteriology of soil, air, water, sewage, milk, and foods; the principles of immunity and the microbiology of disease.

Laboratory fee, \$10, for those seeking four credit hours.

BIOLOGY

S 1. Biology I. Credit three hours. Lectures and recitations, daily except S, 9. *Roberts 392.* Laboratory and field work, M W F, 1:40-4; other sections by special arrangement. *Roberts 302.* Professor CLAASSEN and Mr. WOODRUFF.

This course is designed to acquaint the general student and the prospective teacher with the main ideas of biology through selected practical studies of the phenomena on which biological principles are based. Lectures, laboratory work, and field trips will deal with such topics as: interdependence of organisms as illustrated by insects and flowers, insects and galls, etc.; the simpler organisms, such as amoeba, paramoecium, flagellates, and other protozoans; and algae, fungi, bacteria, and slime molds among plants. The study of these simpler organisms will be followed by studies of such plant types as liverworts, mosses, and ferns, and such animal types as hydra, earthworm, insects, and rogs. Students completing this course will be given credit for the first term's work in Biology I of the regular academic year. Laboratory fee, \$3.50.

S 3. Biology II. Credit three hours. Lectures, M T Th F, 11. *Roberts 392.* Field work and laboratory exercises, T Th, 1:40-4. One other period to be arranged. *Roberts 302.* Prerequisite Biology I, college biology, botany, or zoology. Professor CLAASSEN and Mr. WOODRUFF.

A course dealing with the biological principles of plant and animal life. Heredity, variation, natural selection, mutation, adaptation, life cycle, and metamorphosis, are some of the topics for consideration. Special emphasis is placed upon field studies of the ecological relationships of organisms and students should come prepared for field work.

This course, although not identical with the second term biology of the regular year, will be accepted in the place thereof. Laboratory fee, \$3.50.

SUMMER SCHOOL OF BIOLOGY

Under the auspices of the New York State College of Agriculture and the Summer Session of Cornell University, there has been brought together a group of courses dealing with the biological sciences. These courses furnish an excellent opportunity for students of the biological sciences to have access to a series of studies from year to year in one of the most appropriate locations in the country. For full information see page 60.

BOTANY

S 13. Trees and Shrubs. Credit two hours. Lectures and laboratory, M W, 1:40-5:30, or T Th, 1:40-5:30. Sections limited to twenty students. Additional trips to be arranged. *Plant Science 353.* Assistant Professor MUENSCHER.

A course intended for those who wish to know the woody plants in the field. The aim is to familiarize the student with as many as possible of the trees and shrubs of the Cayuga Lake flora and to teach the main facts of structure, growth, habit, and distribution concerning them. Some all day trips will be required. Laboratory fee, \$1.50; deposit, \$3.

Other courses dealing with plants are offered in the Summer School of Biology. See page 60.

ENTOMOLOGY

S 30. General Entomology. Credit three hours. Equivalent to Animal Biology 3 or Entomology 12. Prerequisite Biology 1 or Zoology 1 or its equivalent. Lectures, daily except S, 10. *Roberts 392.* Practical exercises, M W F, 1:40-4. *Bailey Hall, West Basement.* Professor MATHESON.

This course includes lectures and demonstrations on the characteristics of the orders and families of insects, with a study of their habits, life-histories, and relations to other animals and to plants. The laboratory work consists of the study of the structure, ecology, metamorphosis, and classification of insects. Field trips to study insects in their natural habitats are an important feature. Each student is required to collect and prepare a typical collection of insects. Opportunities are given for the rearing of insects in the Insectary, and special work is offered to suit the needs of individual students. Textbook: Comstock's *Manual for the Study of Insects* (1930 edition.) Equipment: a good hand lens, several insect cases, insect pins, and labels. These can all be purchased in Ithaca. Laboratory fee, \$2.50.

EXTENSION TEACHING

S 100. Oral Expression. Credit two hours. Lectures and practice, daily except S, 10. *Roberts 131.* Criticism by appointment, daily 8-1. Registration limited to twenty-five students. Open only to upperclassmen and regular summer school students. Assistant Professor PEARODY.

This is a course in practical public speaking, designed to give experience by practice in speaking on public questions. Special attention is paid to training in the use of illustrated material. In addition to the work in public speaking a study is made of parliamentary practice. This course should be of special benefit to teachers and extension workers.

Teachers of agriculture, county agents, and other agricultural leaders may arrange for special work during the first two weeks, July 11 to 22.

FLORICULTURE AND ORNAMENTAL HORTICULTURE

S 1. Woody Plant Propagation and Nursery Work. Credit one hour. Lectures, T Th, 9. Laboratory, W F, 1:40-4. Laboratory fee, \$3. *Plant Science* 40 and *Nursery*. Assistant Professor HUNN.

This course includes the methods of propagation of all classes of ornamental woody plants and their special treatment during the first stages of growth. It also acquaints the student with the principles governing the transplanting of trees, shrubs, and herbaceous perennials, and with the methods practiced in all types of commercial nursery management. Should be accompanied by S 3 and S 4. All members of the class must participate in an excursion to some New York State nursery on August 4.

S 3. Landscape Planting. Credit two hours. Lectures and laboratories, T, 10-1, T, 1:40-4:30, W 11-1. Should be accompanied by S 6 and must be accompanied by S 4. All members of the class must participate in the department excursion to Rochester on August 12 and 13. *Plant Science* 433. Assistant Professor PORTER.

A brief course intended to familiarize the student with the best trees, shrubs, and vines, with special emphasis upon their use. Names, characteristics and requirements will be studied in the field and in the laboratory. The lectures will deal with planting practices and the selection and arrangement of plants. Laboratory fee, \$3. Registration limited to 16. Consult department office when registering.

S 4. Landscape Planning. Credit two hours. Lectures and laboratories, W, 8-11, Th, 10-1, Th, 1:40-4:30. Should be accompanied by S 6 and either S 3 or S 8 is required. All members of the class must participate in the department excursion to Rochester on August 12 and 13. *Plant Science* 433. Assistant Professor PORTER.

A discussion of the fundamental principles of landscape planning as related to home grounds, school grounds, and other landscape improvement work. A brief course, not professional, intended for students who desire an intelligent point of view but who do not intend to take technical courses. Laboratory fee, \$3. Registration limited to 16. Consult department office when registering.

S 5. Indoor Flower Growing. Credit one hour. Lectures, T Th, 11. Laboratory, T, 1:40-4:30. *Plant Science* 15. Miss MINNS.

The propagation and culture of plants suitable for winter gardens in homes and schoolrooms, including a study of containers, soils, fertilizers, insecticides. The selection of varieties of bulbs and methods of culture indoors are considered, as are also the method of propagation and general care of species of plants suited for indoor culture. Laboratory fee, \$1.

S 6. Garden Flowers. Credit two hours. Lectures, M T Th, 9, F, 12. Laboratory, W F, 1:40-4:30. *Plant Science* 15 and *Greenhouses*. Miss MINNS. Laboratory fee, \$2.

This course, planned primarily for graduate and advanced students in floriculture and ornamental horticulture, comprises a study of herbaceous plant materials. The aim is to give the student such an intimate knowledge of these forms of plants as may be used in garden planting, either on home grounds, rural social centers, or public parks, more particularly with reference to summer conditions. Students must have had sufficient botany to be familiar with the botanical characters and classification. An excellent collection of plant material is available for demonstrations. All members of the class will participate in an excursion to the Thompson Estate at Canandaigua on August 12 and 13.

S 8. Woody Plant Materials for Landscape Planting. Credit four hours. Lectures, M T Th F, 8. Laboratory and field trip, M T, 10-12:30, W Th, 11-1, M T, 1:40-4:30. *Plant Science* 29 and *Campus*. Professor CURTIS. Intended for graduate students and advanced students in floriculture and ornamental horticulture. Laboratory fee, \$3.

A study of the characteristics and requirements of trees, shrubs, and vines for landscape planting. The laboratories and field trips enable the student to recog-

nize common woody plants. The lectures discuss planting areas, planting practices, and plant materials, in order that the student may learn to see plants not only as growing things but as possible units in designs with which he may be able to improve his surroundings. All members of the class must participate in an excursion to Rochester on August 12 and 13 to visit private estates and public parks. The transportation charge will be \$5.

S 9. Summer Propagation. Credit two hours. Lectures, W Th, 10. Laboratories, W, 8-10, Th, 1:40-4:30, F, 9-12. *Greenhouses and Nurseries.* Assistant Professor HUNN. Intended for students who have had the beginning course in propagation. See S 1. Laboratory fee, \$3.

Advantage is taken of the summer months to amplify the regular and summer courses in propagation by intensive practice in the summer production of soft wood cuttings and in the budding of nursery stocks. This will include the management of hot beds and the lining-out system followed in the production of stock plants. Two extra hours a week before and after classes are required for care of hot beds. Two one-day trips are planned for visits to producing nurseries on July 14 and August 4.

FORESTRY

S 1. The Identification of Trees. Credit one hour. Lectures, T Th, 8. Field work, T, 1:40-4:30. *Fernow 122.* Professor HOSMER.

Identification of the more important trees of the Ithaca region. Characteristics of forest trees that may be observed at various seasons of the year. Tree seeds and their dissemination. The commercial uses of a few of the principal trees. This course should be helpful to teachers in connection with their work in nature study and biology. See Biology S 1 and Rural Education S 7a.

S 4. Forests and Forestry. Credit two hours. Lectures, daily except S, 9. *Fernow 122.* Professor HOSMER.

This course is designed to meet the requirements of those who wish an elementary knowledge of forestry. Topics to be considered: the nature and scope of forestry; the economic importance of forests to the nation, including the influence of forests on stream flow and the relation of the forest to recreation; the forest as a biological unit; methods employed in the perpetuation of forests; brief description of the forest regions of the United States; the present status of Federal, State, and private forestry.

This course should be helpful to teachers in secondary schools whose syllabuses in Biology, Civics, Economics, Physical Geography, and General Science include forestry topics.

METEOROLOGY

S 1. Meteorology and Climatology. Credit two hours. Lectures and discussions, daily except S, 10. *East Roberts 222.* Professor MORDOFF.

This course is adapted to the needs of teachers and students in subjects of which weather and climate are important factors, particularly teachers of physical geography and general agriculture. It is designed to acquaint the student with the laws governing the primary and secondary circulation of the atmosphere and with the development, progression, and conditions that attend cyclones, tornadoes, and other atmospheric phenomena. Attention is given to the principles and practice of weather forecasting from weather maps and from local observations.

S 2. Meteorology and Climatology—Laboratory Course. Credit one hour. W F, 1:40-4, or other periods to be arranged. Must be accompanied by Course S 1. *East Roberts 341.* Professor MORDOFF.

The work consists in the study of the principal weather and climatic elements with the aid of maps, charts, and instruments. The various meteorological instruments will be studied, as well as the methods of taking and recording the observations.

NATURE STUDY

Cornell University is admirably located for the study of nature in the field. Fish hatcheries, state and municipal parks, museums, and game farms are convenient

to the campus and to those who wish to study the methods there followed in addition to becoming acquainted with the wild life in its natural setting. For description of the courses offered in Nature Study see Rural Education, pages 54, 55.

ORNITHOLOGY

S 11. Ornithology. Credit three hours. Lectures, M W, 11. *McGraw* 5. Laboratory, M W, 1:40-4:30, or T Th, 1:40-4:30. Field work, M W, or T Th, 5:30-8 A. M. Professor ALLEN, Dr. ALLEN, and Mr. CROUCH.

This course gives an introduction to the study of birds and familiarity with the local species. The lectures cover such subjects as classification, migration, coloration, song, nest-building, eggs, care of young, methods of attracting birds, and their economic importance. The laboratory work with bird skins gives an intimate knowledge of the birds of Eastern North America and familiarity with the use of a manual. The aim of the field work is the identification of birds by their songs and habits as well as by their plumage. Each student should be provided with field or opera glasses. Laboratory fee, \$3.

S 131. Applied Ornithology. Credit two hours. Lectures, laboratory, and field work. M W, 1:40-4:30, and other hours by appointment. *McGraw*. Open only to those who are taking the elementary course or who have had its equivalent. Professor ALLEN.

This course is intended to meet the needs of students who plan further study of ornithology. The lectures cover the field open to prospective ornithologists, methods of study and teaching, preparation of specimens and lantern slides, bird photography, wild life conservation, and game farming. The laboratory and field work will give practical exercises. Laboratory fee, \$3.

PLANT BREEDING

S 103a. Plant Breeding. Credit one hour. Lectures, M T W, 11. Laboratory, M T W, 1:40-5:30. July 11 to 22. *Plant Science* 146. Professor BUSSELL.

A discussion of the principles concerned in plant breeding and crop improvement, and of the technic of hybridization, selection, seed production and distribution. The course is intended for plant producers, seed growers, county agents, and teachers of agriculture in secondary schools.

POMOLOGY

S 101. Advanced Pomology. Credit two hours. Daily except S, 11. *Plant Science* 114. Professor HEINICKE.

A comprehensive study of the sources of knowledge and opinion as to practices in Pomology. Special emphasis is placed upon a knowledge of the life history of the fruit plants and on their response to various cultural treatments.

S 102. Special Problems in Pomology. Credit two hours. Discussion and laboratory periods to be arranged.

A study of some special topic in the production or handling of fruit. In this course the student is expected to review critically and evaluate the more important original papers relating to a specific problem, and opportunity will be given to take part in special phases of investigations in the orchard.

S 111a. Packing and Storage of Fruit for Market. Credit one hour. Lectures, daily except S, 8. Laboratory, T Th, 1:40-5. July 25 to August 5. *Plant Science* 114 and *Packing House*. Professor HEINICKE.

A special unit course for teachers of agriculture, county agents, and other rural leaders and specialists.

The important factors in harvesting and handling fruit which affect quality and marketability. Particular emphasis is placed on packing apples, in barrels, baskets, boxes, and other retail packages; but the work covers also such fruits as peaches, pears, and small fruits, in so far as these are available. The effect of grades and packages on distribution and marketing is fully discussed, and consideration is given to some of the problems of market inspection. The principles and practices of common and cold storage also are considered.

POULTRY HUSBANDRY

S 137a. **Outstanding Points in Managing a Poultry Business.** Credit one hour. Lectures, demonstrations, and laboratory exercises. Daily except S, 9-11. August 8 to 19. *Poultry* 325. Professor RICE.

A course of sixteen lectures, demonstrations, and laboratory exercises for teachers of agriculture, extension workers, and poultrymen, arranged on a job-analysis basis, designed to present the outstanding problems in the poultry business and to indicate how these should be met. Among the problems considered are: selecting a place to carry on the business; equipment for mass production and ease of operation; selection for vitality and production by physical examination; flock replacement, reducing mortality, business methods.

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A study of the structure and functioning of society, its group organization and activities. Social processes, social forces, and social controls will be exemplified for both urban and rural life.

S 12. The Sociology of Rural Life. Credit two hours. Daily except S, 10. *Fernow* 118. Mr. POLSON.

An examination of the sociological structure of rural life, as a basis for the analysis of rural problems. Some phases of rural life considered are: health, education, religion, standards of life, the family, government, social life, and recreation.

S 111. Rural Community Organization. Credit two hours. Daily except S, 8. *Fernow* 308. Mr. POLSON.

A consideration of the aims and methods of the organization of rural communities. Typical communities are studied, their problems are analyzed, and methods of organization are discussed. The county as a unit of social organization also is considered in its relation to community organization.

S 121. The Family. Credit two hours. Daily except S, 10. *Fernow* 122. Professor SANDERSON. Prerequisite course S 1 or its equivalent.

This course deals with the social problems of the family both on the farm and in the city; the history of the family; the differences in family life in the country and in the city; the function of the family in society; relations of parents and children; marriage and divorce; and factors affecting family relations. Fee for materials, \$1.

S 122. Social Problems and Public Welfare Organization. Credit two hours. Prerequisite course S 1 or its equivalent. Daily except S, 11, *Fernow* 308. Assistant Professor ANDERSON.

A study of the social problems of poverty, crime, delinquency, the physically and mentally handicapped, social insurance, mother's pensions; private and public social agencies; public policy regarding their organization and support. Special attention will be given to the social legislation of New York State.

S 131. Introduction to the Social Psychology of Rural Life. Credit two hours. Prerequisite course S 1 and one course in psychology. Daily except S, 10. *Fernow* 308. Mr. BEERS.

Human behavior in its intimate relation to forms of social organization. A review of pre-social and sub-social psychological factors, followed by a study of socialization, the reciprocal development of personality and the group, and the characteristics of mass action. The class will be encouraged to interpret current group manifestations in the terminology of social psychology. The major approaches and points of view in social psychology will be discussed. Emphasis throughout the course will be upon rural life. Text, readings, reports.

211. The Rural Community. Credit two hours. A course primarily for graduate students. Prerequisite courses S 1 and S 12 or their equivalents. Daily except S, 9. *Fernow* 308. Professor SANDERSON.

A study of the historical development of the rural community; a comparative study of types of rural communities; the rural community as a sociological group; its place in society.

VEGETABLE CROPS

The courses have been planned to meet the needs of advanced and graduate students from this and other institutions as well as for secondary teachers. A program may be chosen entirely in this field, but preferably in combination with other subjects. Special opportunity is afforded this year for work in the marketing of vegetables and fruit in courses in Vegetable Crops, Pomology, and Agricultural Economics and Farm Management.

Schedules have been arranged to avoid conflict with certain courses in other departments that have proved of interest to vegetable crop students. Resident study during the summer and including the Summer School may be counted toward an advanced degree if proper arrangements are made.

S 12. Grading and Handling Vegetable Crops. Credit two hours. Lectures, M W F, 8. *East Roberts* 223. Laboratory, W F, 2-4:30. *East Ithaca Gardens*. Professor WORK.

The geography of vegetable production and distribution. Market and table quality and grades; influence of environment, culture, handling, and storage on quality and marketability; methods of harvesting, grading, packing; inspection, transportation, refrigeration, and storage. A two-day trip is required to visit up-state production centers and city markets: 11 A. M., Friday, August 5, to Saturday evening, August 6. Approximate cost, \$8. Laboratory fee, \$2.

S 12a. Grading and Handling Vegetable Crops. Credit one hour. Lectures, daily except S, 10. July 25 to August 6. *East Roberts* 223. Two-day field trip, 11 A. M., Friday, August 5, to Saturday evening, August 6. Professor WORK.

A special unit course for teachers of agriculture, county agents, and other rural leaders and specialists. The outstanding problems in the grading and handling of vegetable crops will be considered. A two-day trip is required to visit up-state production centers and city markets. Approximate cost, \$8.

S 13. Types and Varieties of Vegetables. Credit two hours. Offered in alternate years. Lectures and laboratory, T Th, 2-6. *East Ithaca Gardens*. Professor WORK.

This course deals with the taxonomy, origin, history, characteristics, adaptation, identification, classification, exhibition, and judging of kinds and varieties of vegetables. Attention is given also to the characteristics, production, and handling of vegetable seeds. The leading varieties of the vegetable crops are grown each year. Laboratory fee, \$2.

[S 101a. **Advanced Vegetable Crops.** Credit two hours.] Offered in alternate years. Not given in 1932.

S 221. **Special Problems in Vegetable Gardening.** Credit two or more hours. Hours to be arranged. Open to graduate students and advanced undergraduates with adequate preparation. *East Roberts* 114. Professors WORK, THOMPSON, and HARDENBURG, and Assistant Professors KNOTT and SMITH.

A study of some specific phase of the growth of vegetable crops, or of the handling of vegetable products. This may involve a critical review of the literature of some special subject, or the investigation of some special phase of the research projects under way in the greenhouse or gardens. Students may, by special arrangement, continue the work throughout the summer.

SPECIAL UNIT COURSES IN THE SUMMER SCHOOL OF AGRICULTURE

Teachers of agriculture, county agents and other extension leaders, district superintendents, high school principals and other educational leaders often find it difficult to be away from their duties for six weeks. The special unit courses have been established to meet the convenience of such workers. See the respective departments for the schedule and description of courses.

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SUMMER SCHOOL OF HOME ECONOMICS

IN THE

NEW YORK STATE COLLEGE OF HOME ECONOMICS

STAFF OF INSTRUCTION

| | |
|---|----------------------------|
| BEULAH BLACKMORE, B.S. | Textiles and Clothing |
| (Professor of Home Economics) | |
| MURIEL BRASIE, M.A. | Textiles and Clothing |
| (Assistant Professor of Home Economics) | |
| OLGA P. BRUCHER, M.A. | Foods and Nutrition |
| (Assistant Professor of Home Economics) | |
| MILDRED CARNFY, B.S., M.A. | Textiles and Clothing |
| (Extension Assistant Professor of Home Economics) | |
| MARIE BELLE FOWLER, M.A. | Child Guidance |
| (Professor of Home Economics) | |
| KATHERINE WYCKOFF HARRIS, B.S. | Institution Management |
| (Assistant Professor of Home Economics) | |
| DAY MONROE, Ph.D. | Economics of the Household |
| (Professor of Home Economics) | |
| HELEN MONSCH, B.S., M.A. | Foods and Nutrition |
| (Professor of Home Economics) | |
| JEAN PATTISON, M.D. | Child Guidance |
| (Pediatrician) | |
| KATHERINE M. REEVES, B.A. | Child Guidance |
| (Instructor in Home Economics) | |
| MABEL H. ROBINSON | Child Guidance |
| (Assistant in Home Economics) | |
| RACHAEL SANDERS, M.S. | Foods and Nutrition |
| (Instructor in Home Economics) | |
| DORIS SCHUMAKER, B.S., A.M. | Family Life |
| (Acting Professor of Home Economics) | |
| ALMA FINCHER SCIDMORE | Household Art |
| (Instructor in Home Economics) | |
| DOROTHY BARNARD SCOTT, B.A. | Household Art |
| (Assistant Professor of Home Economics) | |
| RUTH JEAN SCOTT, B.S. | Textiles and Clothing |
| (Assistant Professor of Home Economics) | |
| ETHEL B. WARING, Ph.D. | Child Guidance |
| (Professor of Home Economics) | |

Home Economics is as much challenged by the present economic situation as it was during the world war. Reduced incomes are bringing many individuals and families face to face with the problem of readjusting their standard of living. For most persons who even in times of prosperity have limited margin above necessities, the present reduction of income requires unusually wise guidance on the part of all who have the opportunity to advise. Even for those in the more fortunate economic classes unwise reductions in the expenditure for food, clothing, house furnishings, and other items may result in impairment of health and of individual and family well-being.

Problems which now loom large in the management of the family finances are those of providing a healthful diet for less money, of maintaining health and making the best appearance possible in old or less expensive clothing, and of keeping the home happy and attractive with little or no money outlay.

To be of practical service in this situation home economics programs must help people to effect the adjustments that the lower economic level of living necessitates. The New York State College of Home Economics has therefore undertaken to shape its summer school to this end. It is suggested that teachers, extension workers, social service workers, dietitians, and the like will benefit most from the courses if they come well informed about the needs in the situations which they represent. Information supplementing what they now have regarding community conditions may be obtained through conferences with homemakers and various public agencies and officials.

The program of courses for the summer school is devised primarily to meet the needs of the following groups:

1. Teachers, extension workers, dietitians, institutional managers, advisers on clothing, house furnishings, home management, or child guidance who wish help in reorganizing their programs more adequately to meet the needs of the situation which they represent, and who at the same time wish to pursue courses for academic credit.

2. Students who wish to broaden and strengthen their background of home economics training and improve the quality of their work but who do not plan to specialize in any one field, such as is necessary for an advanced degree. Such supplementary training is in many cases of as great value for professional improvement as is the work for the master's degree. If these students desire to specialize later, the work done in some specific field may be applied then to an advanced degree in that field.

3. Students who wish to specialize intensively in some one or two related fields of home economics, and ultimately to obtain an advanced degree. The fields in which graduate work of this type is offered are: foods and nutrition, textiles and clothing, household arts, economics of the household, and family life. One year's residence is required for the master's degree, or its equivalent of four summer sessions. Before registering for an advanced degree the student should seek an adviser in the field of her major interest and then plan her program of courses with this adviser.

For convenience in registration the courses offered are divided into related subject matter groups, namely,

Family Life

Foods and Nutrition

Textiles and Clothing

Household Art

Household Management

Institution Management

An additional section, general in character, is also indicated. Under it are listed the courses which will be of value to everyone in home economics regardless of the special field of subject matter which may claim a major interest.

FAMILY LIFE

Courses in child development and parent education form a part of a family life program. They are aimed to promote efficient, harmonious, and wholesome home life by giving parents, pre-parents, and teachers an understanding of child nature, its needs, and its guidance. For the general teacher of home economics, certain courses are planned as preparation for teaching the courses in child care and training in the high school. Since it is impossible to gain adequate, practical information about children unless opportunity is offered for observing them, a nursery school having children between the ages of two-and-a-half and four-and-a-half years is maintained as a laboratory for courses in child development. The children are under the direction of experienced nursery school teachers, psychologists, a dietitian, a trained nurse, and a pediatrician. Students have an opportunity to observe in the nursery school and to attend parent meetings. Successful applicants for all but the orientation course must have had recent training in educational psychology.

Students whose applications for courses in child development and parent education have been accepted will be assigned to laboratory observations at the second meeting of the class.

S 100. General Orientation Course in Child Guidance. Credit two hours. Lecture-discussions, daily except S, 8. *Home Economics* 100. Laboratory, three hours a week by arrangement. *Nursery School*. Professor FOWLER, Miss REEVES, and Miss ROBINSON.

This course is planned to meet the needs of those general teachers of home economics who are required to teach child care and training in the high schools and who are not eligible for the regular elementary course. This is a general course without the child-psychology prerequisite. The object is to promote, through observation and discussion, some understanding of child needs and of child-child and child-adult relationships. Attention is also given to the fundamental principles involved in child development and to the obvious factors that affect child growth. Laboratory fee, \$5.

S 101. Principles in Child Guidance (Elementary Course.) Credit three hours. Prerequisite Rural Education 111 (Psychology for Students of Education) or its equivalent. Prerequisite or parallel Rural Education 116 (Psychology for Students of Child Training.) Lecture-discussions, daily except S, 8. *Home Economics* 310. Laboratory, daily except S, one hour by arrangement. *Nursery School*. Professor WARING, Miss REEVES, and Miss ROBINSON.

This course is designed to help students to see children in relation to the adults who guide them. It undertakes to direct students to observe the child's behavior impersonally and objectively; to record accurately what they see; to organize these records so that they disclose the significant and characteristic behavior of children and distinguish between desirable and undesirable behavior and between desirable and undesirable guidance procedures of adults. Application of these principles is made to the behavior of the adult students. Laboratory fee, \$7.50.

S 125. Home Nursing and Child Hygiene. Credit two hours. Lectures and discussions, daily except S, 2. *Home Economics* 100. Dr. PATTISON.

This course is planned to meet the needs of teachers required to teach child care and home nursing in the high schools. Its purpose is to help the student to observe and appreciate evidence of good health and the conditions under which good health is promoted, and to give practical knowledge about the prevention of diseases and about nursing techniques in the home.

S 220. Participation in Nursery School. Credit three or four hours. Prerequisite Family Life 101 (Principles in Child Guidance) and 107 (Environmental Factors in Child Guidance). *Nursery School.* Laboratory and conference hours to be arranged. Professor FOWLER, Miss REEVES, and Miss ROBINSON.

This course is open only to a limited number of seniors and graduate students whose preparation is satisfactory to the instructor. For each hour of credit there is required a total of thirty hours of supervised participation with the children in the nursery school, and one hour each week in conference with the teaching staff.

FOODS AND NUTRITION

The summer school courses in foods and nutrition are designed to help students to realize the problems of family nutrition as they appear in any community at any time and to give them an opportunity to learn as teachers, as extension workers, as mothers, or in other capacities, how to cope successfully with these problems.

S 131. Problems of Family Nutrition with Special Emphasis on Child Feeding. Credit 1, 2, 3, or 4 hours. The prerequisite is a knowledge of general nutrition and dietetics obtained from previous college courses in these subjects. Lectures and discussions, M W F, 9. *Home Economics* 100. Laboratory, section 1, Infant Feeding, T Th, 3-5, *Homes in Ithaca* and *Well-baby clinic*; section 2, Feeding of Pre-school Children, T Th, 11-1, *Nursery School* and *homes in Ithaca*; section 3, Feeding of School Children, T Th, 2-4:30, *Home Economics* 270, *Cafeteria*, and *homes in Ithaca*. Students registering for Feeding of School Children are advised to register for Institution Management, S 104. Each laboratory is limited to twenty students. Professor MONSCH and Miss SANDERS.

This is a study of family problems in nutrition which gives special emphasis to the nutritional need of the child. It offers experience for the study of actual family situations provided by laboratory practice in a well-baby clinic, in private homes, in the nursery school, and in the cafeteria. The nutritional needs of children of all ages, the importance of proper feeding to the physical health of the child, and the relation between sound nutrition practice in feeding children and the community health and family income are considered. Laboratory fee, \$5 for each laboratory credit hour.

S 221 A. Survey of Food and Nutrition Problems. Credit two hours. This course is open to graduate and advanced students whose preparation is satisfactory to the instructor. Daily except S, 2. *Home Economics* 245. Assistant Professor BRUCHER.

The interrelation of subject matter in food selection and preparation; comparison and evaluation of methods for the effective use of nutrition knowledge in food study. A consideration of adequate nutrition on reduced food budgets; the relation of the individual to the community nutrition problems. How to use demonstration animals in health teaching and how to analyze the results of sound nutrition practice as measured in individual progress. Consideration of source material and literature. Laboratory fee, \$2.50.

S 221 B. Special Problems in Foods and Nutrition. Credit two hours. This is designed for students registered in S 221 A who wish to apply the general subject matter and methods of S 221 A to individual problems. Daily except S, 3. *Home Economics* 245. Assistant Professor BRUCHER.

The selection of problems will be made on the basis of actual teaching situations of students. Laboratory fee, \$2.50.

TEXTILES AND CLOTHING

S 5. Clothing Selection and Construction. Credit two hours. This course is for teaching and extension work. Registration is limited to sixteen students. Laboratory, daily except S, 2-4. *Home Economics* 305. Assistant Professor CARNEY.

This course emphasizes the selection and construction of clothing to meet the needs of definite groups of people within a community. Each garment will be

studied with reference to its cost and its appropriateness for and place in the wardrobe of specific persons. Opportunity will be given to visit various groups of people, and to study their clothing needs. Garments may be made for persons of any age. Laboratory practice will include the use of commercial patterns and of machine sewing suitable to the garments constructed. Students provide all materials, which are subject to the approval of the instructor in charge. Estimated cost of materials, \$10. Laboratory fee, \$3.

S 213. Problems in Costume Design. Credit two hours. Open to graduate students and others who have adequate preparation. Registration is limited to sixteen students. Laboratory, daily except S, 2-4. *Home Economics* 300. Assistant Professor RUTH J. SCOTT.

This course will include a study of the relations of art, psychology, personality, and fashion to the selection of satisfactory garments. The problems of the course will be adapted to meet the needs of the individual student. The situation which the student represents will be considered and adaptation of the problems will be made to meet her specific community needs. A survey will be made of available literature in the field of costume design. The laboratory work will consist in applying the fundamental ideas of art to costume, through an interpretation of fashion magazines and modeling on the dress form. Students will provide all materials subject to the approval of the instructor in charge. Estimated cost of materials, \$10. Laboratory fee, \$3.

S 217. Survey of Present Clothing Problems. Credit two hours. Designed especially for graduate and advanced students who are teachers and others who have adequate preparation. Registration is limited to sixteen students. Lectures, T Th, 11. Laboratory, M W F, 11-1. *Home Economics* 300. Assistant Professor BRASIE.

In this course consideration is given to problems of change involved in organizing laboratory work in clothing to meet the present economic emergency. It is urged that every student planning to register for this course make an informal survey of the practical clothing needs of her community before coming to Ithaca. The selecting of problems to be presented in clothing classes will be discussed. Illustrative material for efficient presentation will be a part of the work. A comparative study of different methods which may be used in adapting clothing subject matter to family and community needs will be made. Students will provide all materials subject to the approval of the instructor in charge. Estimated cost of materials, \$10. Laboratory fee, \$3.

S 255. Present Problems in the Purchase of Household Textiles. Credit two hours. Designed especially for graduate and advanced students who have adequate preparation. Registration is limited to sixteen students. Lectures, M W F, 2. Laboratory, T Th, 2-4. *Home Economics* 310. Professor BLACKMORE.

Concrete examples of consumer problems in buying household textiles will be studied. The interpreting of labels and the technical information necessary to be an efficient buyer will be considered. Slogans and other types of advertising will be evaluated. Adaptation of this material will be made to meet the needs of members of the class and the changing economic conditions in the situations which they represent. Estimated cost of materials, \$2. Laboratory fee, \$3.

HOUSEHOLD ART

S 102. Art Essentials in Homemaking. Credit two or four hours. Registration is limited to twenty students. This course cannot be substituted for Household Arts 31 given during the regular year. Credit two hours. Lecture and laboratory, daily except S, 11-1. Credit four hours. Lecture and laboratory, daily except S, 11-1 and 2-4. *Home Economics* 415. Mrs. SCIDMORE.

This course involves the practical application of art to current home and community problems. It will include lectures and discussions on architecture, furniture, textiles, and crafts; trips to homes, schools, and other buildings of interest; and student problems in the selection and arrangement of furniture, of draperies, and of upholstery materials, including those suitable for school or com-

munity rooms. An opportunity will be given the student through observation and experiment to set up standards by which both old and new furnishings may be evaluated. Laboratory fee, \$5.

S 245. Home Furnishing Problems. Credit two hours. Especially designed for teachers and extension workers. Prerequisite S 102 or a satisfactory equivalent. Registration is limited to twenty students. Lecture and laboratory, daily except S, 9-11. *Home Economics* 415. Assistant Professor SCOTT.

In this course the use of smaller articles in home furnishing and the possibilities in old and inexpensive smaller furnishings are stressed; also an evaluation of these articles according to standards of usefulness and beauty is made. The choice of problems will be determined by the special needs of the students. These problems may be worked out through the aid of various media such as wood finishing, dyeing, block printing, and simple stitchery. Students are requested to bring with them any materials they may have on hand upon which they wish to work in this course. Laboratory fee, \$7.

ECONOMICS OF THE HOUSEHOLD

This field of economics of the household, one of the newer divisions of home economics, is concerned primarily with problems centering around the following important aspects of family living: the family's income, its purchasing power at different price levels, its adequacy or inadequacy, its regularity, its source and the members by whom it is earned; the household as a center of production, the members of the household as a consumption group; the household buyer, attempting to select goods intelligently in a complex market. Such problems as these become of especial importance now when many families have reduced incomes.

S 140. Problems of Household Production and Consumption. Credit two hours. Daily except S, 3. *Home Economics* 100. Professor MONROE.

This course will deal with some of the outstanding problems of the household as a producing and consuming unit: decisions of what shall be produced at home and what purchased; solutions for questions the housewife must answer about the increasing demands upon the income and the relationship between the family's resources of time, energy, and money; problems of consumption dealing with the direction of expenditures so as to lead to the fullest development of all members of the family. Fee for materials, \$2.

S 160. Problems of the Household Buyer. Credit two hours. Daily except S, 11. *Home Economics* 245. Professor MONROE.

This is a survey of the problems of the household buyer endeavoring to make intelligent selections of goods in the modern market. The following topics will be considered: the difficulties of the buyer in a market where fraud and adulteration may mean pecuniary advantage to the seller; attempts to influence consumer demand, such as advertising and salesmanship; the inadequacy of the information available as to quality and comparative prices; the guides upon which the consumer may depend for aid, as grades, labels, and other standards; the protection given by law and other forms of social control; the structure of markets and the channels of distribution; marketing expenses and price policies with especial reference to buying habits which tend to increase costs. Fee for materials, \$2.

INSTITUTION MANAGEMENT

The purpose of the course in institution management is to give students some help with those problems of the school lunch which may arise in the small rural or township schools which prepare only one simple hot dish or in the larger city schools which manage cafeterias.

S 104. The School Lunch. Credit two hours. Open to graduate or undergraduate students whose preparation in foods and nutrition is satisfactory to the instructor. Registration is limited to sixteen students. Students taking this course are advised to take at the same time Foods and Nutrition, S 131. Lectures and

discussions, M W F, 9. *Home Economics* 245. Laboratory, T Th, 2-4:30, with two additional practice periods in the cafeteria each week, 11:30-1:30 and 5-7, the days to be assigned individually. Professor MONSCH, Assistant Professor HARRIS, and Miss SANDERS.

This course, planned to help students with the problems of the school lunch, will be divided into two parts. The first four weeks will deal with organization management, equipment, selection, and purchase of food, and with the preparation of soups, meat substitutes, salads, and simple desserts. The last two weeks will deal with health education. Laboratory fee, \$8.

GENERAL

S 180. **Guidance for Workers in Home Economics.** Credit two hours. Lectures and discussions, daily except S, 3. ————. Open to both graduate and undergraduate students. Acting Professor SCHUMAKER.

An orientation course intended to establish a better understanding of human relationships in each of the fields of home economics. Among these are such problems of relationship as develop in the home around the distribution of household tasks; the family budget; children's allowances; use of time; choice of food; clothing; house furnishings; and such problems of relationship as develop in home economics classes and in extension groups around uneven interests and limited or over-zealous cooperation.

S 283. **Progressive Approaches in Home Economics.** Credit two hours. Lectures and discussions, daily except S, 12. *Home Economics* 100. Open to graduates in home economics with experience in the field. Intended especially to meet the needs of teachers, home demonstration agents, extension specialists, and student advisers who wish to improve the quality of their work. Acting Professor SCHUMAKER.

The course will deal with the problems faced, the programs developed, the materials used, and the results achieved in the fields of home economics as presented by those enrolling in the course. It will aim to stimulate and clarify thinking regarding the appropriateness of home economics content in the situations represented. Assignments will be individual and will deal with specific phases of the work in which each member of the class is engaged.

SUMMER COURSES IN HOTEL ADMINISTRATION

HOWARD BAGNALL MEEK, M.A., in Charge

[Professor of Hotel Management]

In 1922 Cornell University established, with the cooperation and financial assistance of the American Hotel Association, a four-year course in Hotel Administration for high-school graduates desiring to enter the administrative departments of the hotel business. Many hotel proprietors and managers, who have been unable to take a four-year university course, have asked for shorter courses with less formal entrance requirements.

To meet this demand periods of less than six weeks have been arranged. For application blanks and information concerning the specific courses, applicants should write Professor H. B. Meek, Home Economics Building, Ithaca, New York.

REQUIREMENTS

Anyone employed in hotel work is eligible for admission. Prospective students will be required to present evidence of good character, of sincerity of purpose, and of interest in hotel work. It is distinctly to the advantage of prospective students to file applications early, in any event not later than June 15.

EXPENSES

The tuition fee for each unit course of three weeks is \$30.00. There is a fee of \$1.50 for Willard Straight Hall. Laboratory fees are required in certain courses for supplies used.

For further general information, see pages 13 to 21.

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